THE INACCESSIBILITY OF ELEMENTARY SCHOOLS IN FULTON COUNTY

CAUSES, CONSEQUENCES, AND ALTERNATIVES

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The rate of obesity among American children is twice as high as it was in the late 1970's. According to James O. Hill, a prominent nutritionist at the University of Colorado, "We've got the fattest, least fit generation of kids ever."

Eric Schlosser, Fast Food Nation

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

SUMMARY

Everyone understands that elementary schools in suburban areas are inaccessible and poorly sited. A compelling conclusion from this thesis is that only 12% of the approximately 40,000 elementary school children in Fulton County, Georgia, the focus of this study, are able to walk to school, given the school location and siting. Clearly, school location is a critical impediment for walkability, which is an emerging focus of public health.

Three guiding questions are posed to explore the causes and consequences of elementary school inaccessibility. First, what influences the selection and design of elementary school sites in suburban locations? Second, what is the specific evidence that demonstrates inaccessibility? Third, what actions can be taken to address the problem?

Schools located in Fulton County, Georgia are the subject of this thesis because Fulton County is typical of most suburban areas, in that the housing patterns are characterized by low density, cul-de-sac type development, large block size, and are designed with an assumption of total reliance on automobiles. Fifty-three elementary schools are included in this study. Recommendations and strategies are provided to correct the problems in existing schools to make them more accessible. The conclusions and recommendations follow the analysis and strategies are offered at three scales of analysis.

CHAPTER 1

INTRODUCTION

From our everyday experience and casual viewing of maps, we know that elementary schools in suburban areas are not easily accessible by most school children. This is a result of site selection and site design processes which seem to create barriers and disconnect communities instead of connecting them. This problem occurs across three scales. The first is the location of the elementary school within the attendance zone, or school district. The second is the relationship between the school site itself and and the surrounding area within a quarter mile radius. The third scale of analysis includes the size and orientation of the school parcel, as well as the location of the building and the individual site design surrounding the school.

Three guiding questions are posed to explore the causes and consequences of elementary school inaccessibility. First, what influences the selection and design of elementary school sites in suburban locations? Second, what is the specific evidence that demonstrates inaccessibility? Third, what actions can be taken to address the problem?

The first question is answered by examining the State of Georgia Department of Education guidelines, which direct school site selection and design decisions. These guidelines clearly have a primary influence on local school board decisions. The second question is addressed by performing detailed analyses of the existing conditions found at elementary schools. These analyses were conducted at the three different scales where the problem of inaccessibility was identified: the scale of the attendance district, the scale of the immediate surroundings of the school, and the scale of the individual school site. The analysis examines several issues at each scale and provides a measure of the problems identified.

The third question is answered by analyzing the evidence gathered from the site analysis. Certain measurable existing conditions clearly result in school inaccessibility. These results are then used to inform recommendations and design moves to address and correct the problems. The recommendations again follow the three scales of the site analysis to provide a comprehensive solution to the problem.

Schools located in Fulton County, Georgia are the subject of this thesis because Fulton County is typical of most suburban areas. Like most suburban areas, housing patterns are characterized by low density, cul-de-sac type development, designed with an assumption of total reliance on automobiles. Spatial data for Fulton County is also readily available for inclusion in a geographic information system (GIS) from which to begin the assessment of existing conditions. Fifty-three elementary schools are included in this study. Lake Forest Elementary School and Renaissance Elementary School were excluded due to insufficient data. Schools located within the City of Atlanta have also been excluded.

As an introduction to the project area, see the following Figure 1.1. The number of students in the suburban schools range from 380 students attending College Park Elementary School to 1,094 students attending Stonewall Tell Elementary School. The exact enrollment numbers can be seen in Table 1.1 and can be correlated to the school name using the Key Map - Elementary School Locations, Figure 1.1. Each point also represents exactly where the school is located within the attendance district. The district sizes range from 730 acres to 48,848 acres.

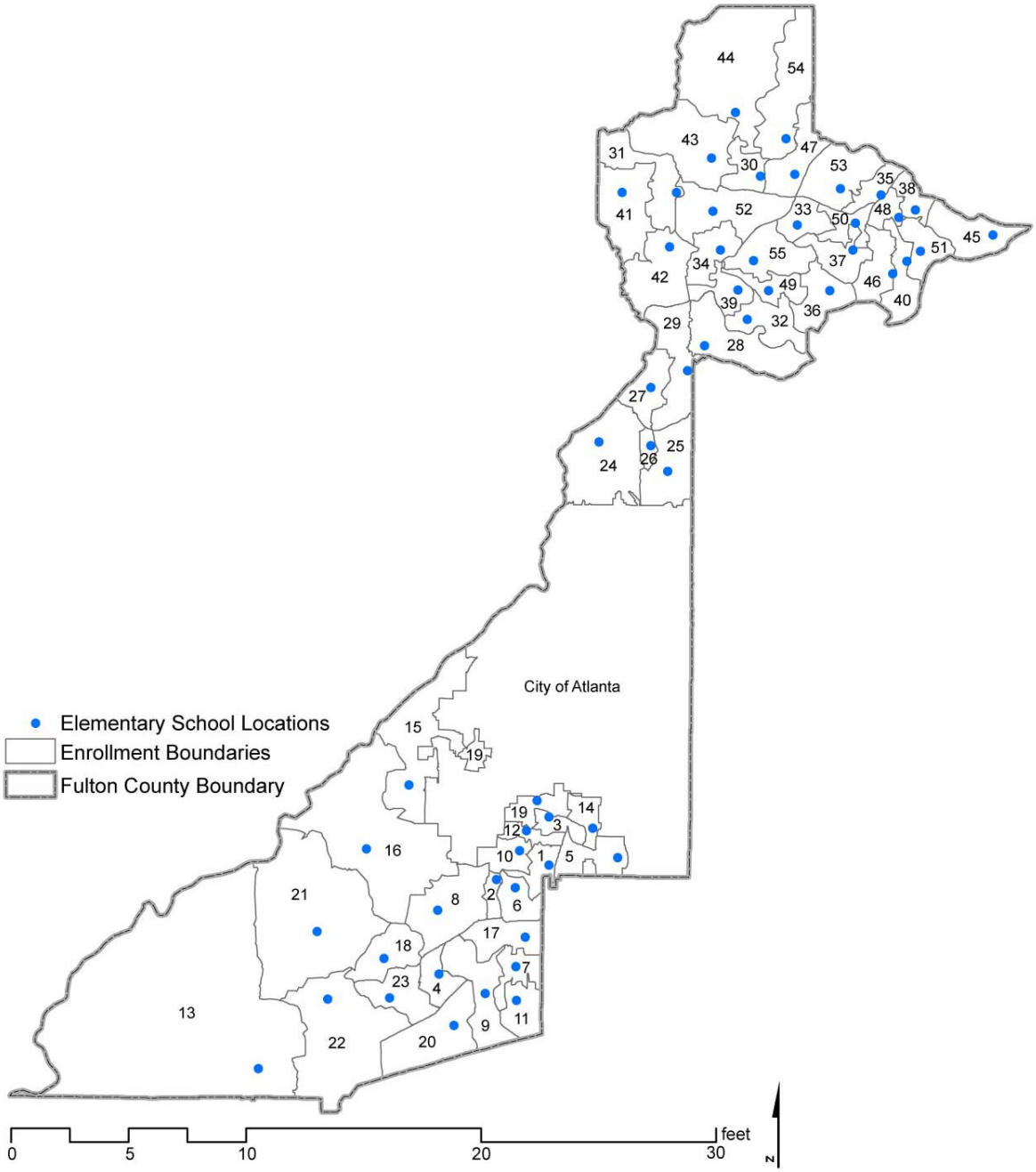

Figure 1.1: Key Map - Elementary School Locations

Table 1.1: Total Elementary School Enrollment and Attendance District Area

Elementary School Name	Key	Enrollment	Area of School Attendance District (acres)
A. Philip Randolph	15	572	8,053
Abbotts Hill	48	719	1,059
Alpharetta	30	702	1,815
Barnwell	36	729	2,905
Brookview	2	642	730
C. H. Gullatt	4	542	1,736
Campbell	23	892	3,006
Cogburn Woods	54	916	6,156
College Park	1	380	1,524
Conley Hills	3	543	1,097
Crabapple Crossing	43	869	6,889
Creek View	53	975	4,169
Dolvin	37	972	2,373
Dunwoody Springs	28	889	5,336
Esther Jackson	39	693	1,858
Evoline C. West	22	892	11,471
Findley Oaks	38	816	1,364
Hamilton E. Holmes	19	649	2,519
Hapeville	5	693	2,675
Harriet Tubman	6	529	1,867
Heards Ferry	24	398	7,607
Hembree Springs	52	823	5,263
Heritage	17	1024	2,824
High Point	25	617	4,154
Hillside	49	716	1,719
Lake Forest	26	601	626
Lake Windward	35	880	1,438
Liberty Point	18	722	3,051
Love T. Nolan	11	782	2,270
Manning Oaks	47	949	3,166
Mary M. Bethune	7	695	1,893
Medlock Bridge	40	680	2,544
Mimosa	34	855	2,425
Mount Olive	10	532	1,719
Mountain Park	41	823	5,023
New Prospect	33	601	1,825
Northwood	55	885	3,540
Oak Knoll	12	593	991
Oakley	20	833	5,460
Ocee	50	793	1,543
Palmetto	13	547	48,848
Parklane	14	460	1,332
Renaissance	21	1082	17,217
River Eves	32	743	2,999
Roswell North	42	851	4,924
S. L. Lewis	9	721	4,302
Seaborn Lee	8	614	5,324
Shakerag	45	809	3,533
Spalding Drive	27	706	2,609
State Bridge Crossing	46	730	2,500
Stonewall Tell	16	1094	16,623
Summit Hill	44	1039	12,408
Sweet Apple	31	894	3,919
Wilson Creek	51	861	2,239

This thesis is organized in three parts following the introduction. Chapter Two includes a detailed discussion of the Georgia Department of Education guidelines as they are currently written. Chapter Three is a documentation of the site assessment and analysis for all the schools. In Chapter Three, the issue of school accessibility is investigated at the three scales described in this introduction. The fourth chapter includes policy and design recommendations for retrofitting existing schools to make them more accessible and to incorporate accessibility in the design of new schools.

CHAPTER 2

CURRENT SITE SELECTION PROCESS IN FULTON COUNTY

The Georgia Department of Education (DOE) Facilities Services Unit publishes, '*A Guide to School Site Selection*,' which local governments, including Fulton County, must abide by in their school site selection process. These criteria outlined in this document are used to make decisions regarding the locations of new schools. However, 31 schools in this thesis do not adhere to some aspect of the criteria of the Guide. Since this Guide was published December 8, 2003, older schools would not necessarily be expected to conform to the criteria. This study found that new schools do not completely follow the Guide either, since the language of the document gives suggestions rather than mandates.

The decision making process that guides choices about school sites does not evaluate the correct criteria, and the factors that are considered actually encourage the selection of inaccessible school sites. Although the Guidelines state that, "The school site should contribute positively to the health, safety and social aspects of a child's life at school,"[1] the actual result of the implementation of the guidelines does not achieve these goals.

2.1 Attendance District

The current Guidelines favor large schools on large sites to accommodate high numbers of enrolled students. The guidelines also state that the "possibility of expansion"[2] should be considered when choosing a school site. This is to accommodate future expansion of the school by enrolling larger numbers of students in ever larger buildings, located in attendance districts which draw from large areas.

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[1] Georgia Department of Education, A Guide to Site Selection, 2003.
[2] Ibid.

2.2 Quarter Mile Radius

The Guidelines state that "whenever possible, sites adjacent to heavily traveled streets and highways should be avoided."[3] The phrase "whenever possible" is vague and, as the evidence shows, allows for frequent disregard of the recommendation. As shown in Figure 3.16, four schools are located beside interstate highways. Not only does this pose an air quality hazard, as seems to be the motivation for inclusion in the Guidelines, but one entire boundary of the school is severed from the surrounding community. These school sites have permanently restricted or eliminated mobility along one boundary and therefore any chance for students to access the school by foot or bicycle from that direction.

The guidelines specify that, "whenever possible, the selection of a school site in an area zoned for commercial or industrial development should be avoided."[4] The language "whenever possible" again does not convey that this is a requirement, but merely a suggestion. Therefore the evidence shows there are multiple instances where an elementary school is located adjacent to commercial or industrial development. Schools are also often located in transition zones between commercial and residential land uses. This is not desirable, in addition to the school being inaccessible from one direction, the residential household density adjacent to the school is reduced.

The Guidelines state that the site should not be located in the floodplain, and that a letter of assurance stating this fact is required to be obtained from the Georgia Department of Natural Resources.[5] However, 17 schools in the study area are located on a parcel partially located in the floodplain.

The Guidelines make multiple references to the importance of minimizing safety

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[3] Georgia Department of Education, A Guide to Site Selection, 2003.
[4] Ibid.
[5] Ibid.

hazards. They state that "the school site should be free of conditions and installations which endanger the…health of children."[6] Safety hazards specified by the Guidelines to be avoided include electrical transmission lines and natural gas transmission lines. Yet four schools in the study are located adjacent to electrical transmission lines and one school is located adjacent to a natural gas line.

2.3 Site

The Guidelines favor large parcel sizes for individual school sites. Potential school sites are required to be a certain minimum acreage. The minimum acreage for an elementary school site is, "five acres plus one acre for each 100 children in FTE."[7] The Full-Time Equivalent (FTE) report is the system that Georgia schools are required to use to calculate student enrollment for school funding decisions.[8] The FTE count of students is based on school enrollment. For the purposes of this thesis, simple enrollment numbers are used to estimate the FTE count. Therefore an additional one acre is required for every 100 students anticipated to be or currently enrolled in the school. The guidelines specify that sites larger than this stated minimum are actually preferable, "although minimum acreages are established, large acreages are highly desirable."[9]

Finally, the Guidelines state that, "the desirability of public water and sewage service to a school site cannot be over emphasized."[10] Although this statement expresses a preference for the availability of public sewer service, it is just that, a preference, not a mandate. The availability of public sewer service is necessary to achieve a higher density of households surrounding the school, which is the type of household distribution recommended by this paper as the only type which is sustainable.

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[6] Georgia Department of Education, A Guide to Site Selection, 2003.
[7] Ibid.
[8] Georgia Department of Education, FY2008 FTE Data Collection General Information, 2008.
[9] Georgia Department of Education, A Guide to Site Selection, 2003.
[10] Ibid.

The availability of public sewer is an absolute requirement for the selection of a school site. The guidelines do state that, “Only in cases of overriding circumstances will site approval be granted at locations which cannot be served by public sewage systems.”[11] The language contained in the Guidelines is vague and it is unclear as to what would constitute “overriding circumstances.” The negative impacts regarding water quality posed by a large facility such as an elementary school being served by an on-site sewage management system, although beyond the scope of this paper, are also certainly worth noting. The “overriding circumstances” in some instances appears to be simply political pressure from the surrounding community to maintain a low density single family residential character for the community.

The Guidelines include the health of children as a stated goal, yet they do not include any requirement or measures to facilitate or encourage the selection of sites that could be accessible for students walking or cycling to school, which would be an opportunity for children to engage in physical activity, reducing the negative health impacts caused by obesity and inactivity. The Guide as it is currently written, results in the selection of sites that are disconnected from the surrounding communities. Suggested revisions to both the language and criteria in the Guide are included in this thesis.

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[11] Georgia Department of Education, A Guide to Site Selection, 2003.

CHAPTER 3

FULTON COUNTY ELEMENTARY SCHOOLS

3.1 Attendance District Analysis

The problem of elementary school inaccessibility in Fulton County begins at the scale of the attendance district. The attendance districts as they currently exist require students to travel long distances to their school from remote neighborhoods.

3.1.1 Residential Density

In 25 out of 53 districts, the school is not located in the highest density residential area, according to the 2000 Census data. Figure 3.1 illustrates the household distribution in Fulton County according to the 2000 census data overlayed with the school enrollment district boundaries. Each point represents exactly where the school is located within the attendance district, and it can be clearly seen that the schools are not always sited with regard to the actual household population distribution.

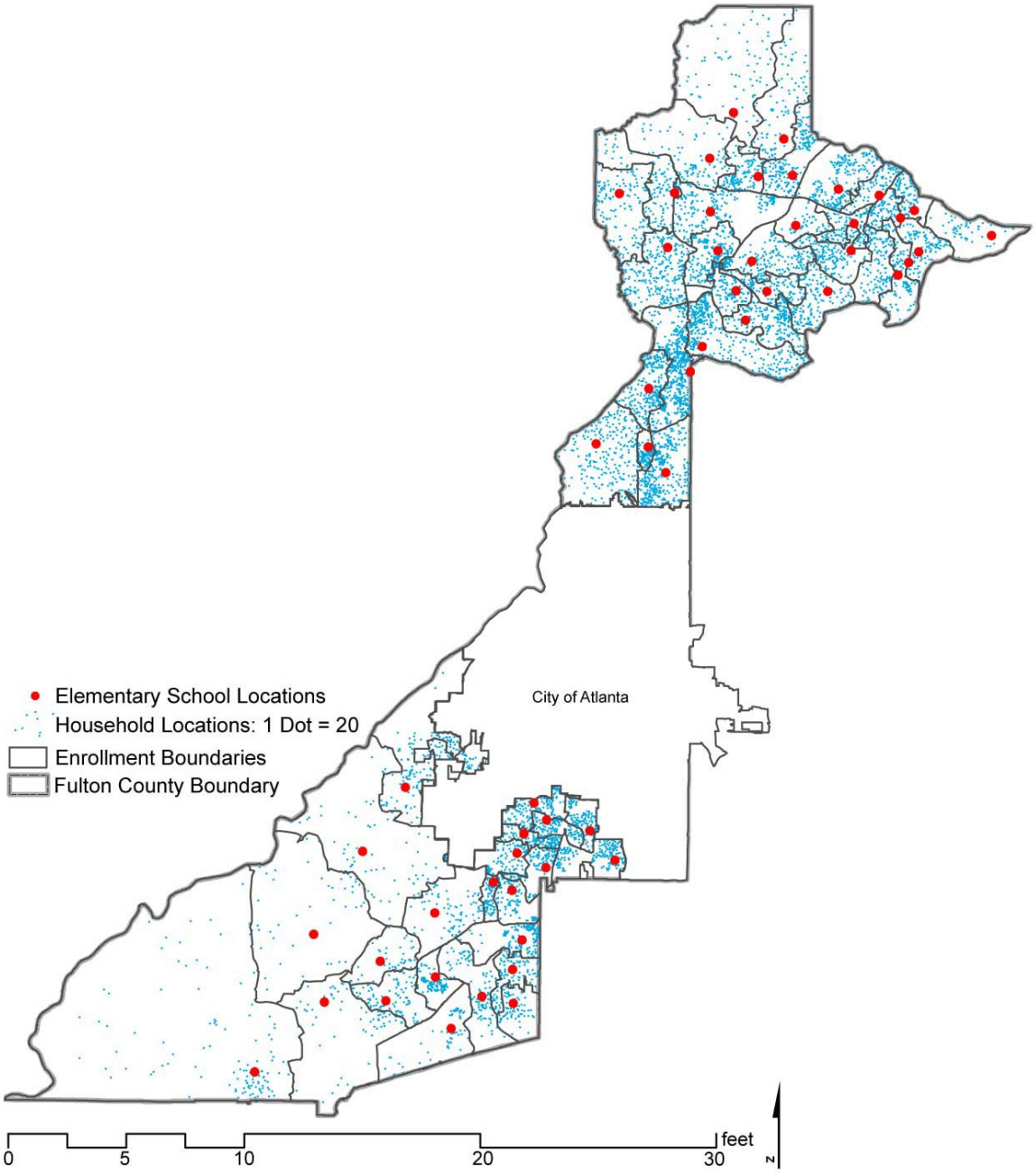


Figure 3.1: Population Distribution for Fulton County (2000 Census Data)

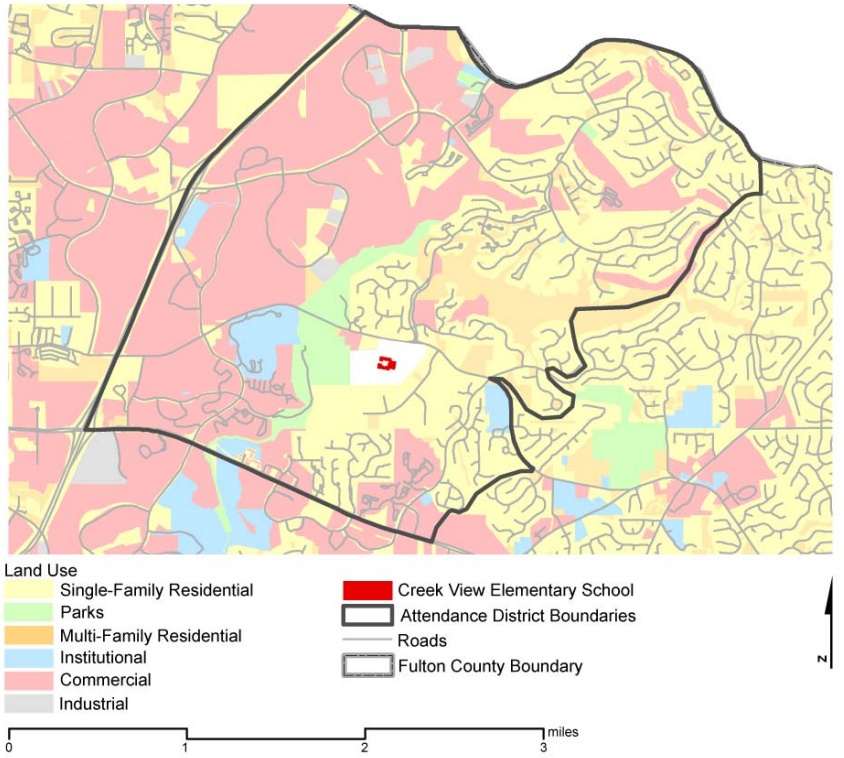
3.1.2 Land Use Adjacencies

Schools are often not located in close proximity to the neighborhoods that they serve. When patterns of land use are analyzed at the scale of the attendance district, nine out of 53 schools are not located in the center of areas designated as residential land use. Instead they are located on the edge of the residential area in the district, adjacent to zones of non-residential use.

Table 3.1: Schools Located on the Edge of Residential Areas

Elementary School Name	**Location of Elementary School Relative to Residential Areas in the District**
Creek View	Located on the western edge of the residential area, adjacent to park and commercial land use.
Findley Oaks	Located on the edge of the residential area, adjacent to commercial land use.
Harriet Tubman	Located on the northern edge of the residential area, adjacent to industrial and commercial land use.
Hembree Springs	Located on the southeastern edge of the residential area, adjacent to institutional and commercial land use.
Hillside	Located on the western edge of the residential area, adjacent to institutional and commercial land use.
Lake Windward	Located on southwestern edge of the major residential area, adjacent to park and commercial land use.
Manning Oaks	Located on the northeastern edge of the southern residential areas, adjacent to commercial land use zone, separated from large residential area in the north.
New Prospect	Located on the western edge of the residential area, surrounded on three sides by commercial land use.
Northwood	Located on the western edge of the residential area, adjacent to institutional use and commercial land use.

Figure 3.2 shows the schools which are located on the edge of the residential area in the district.



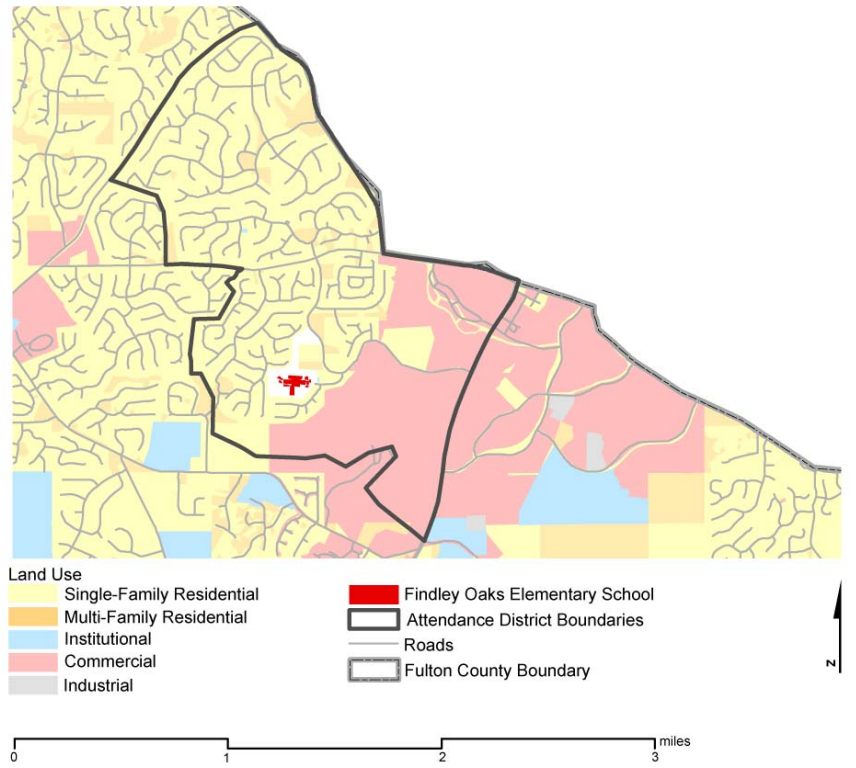
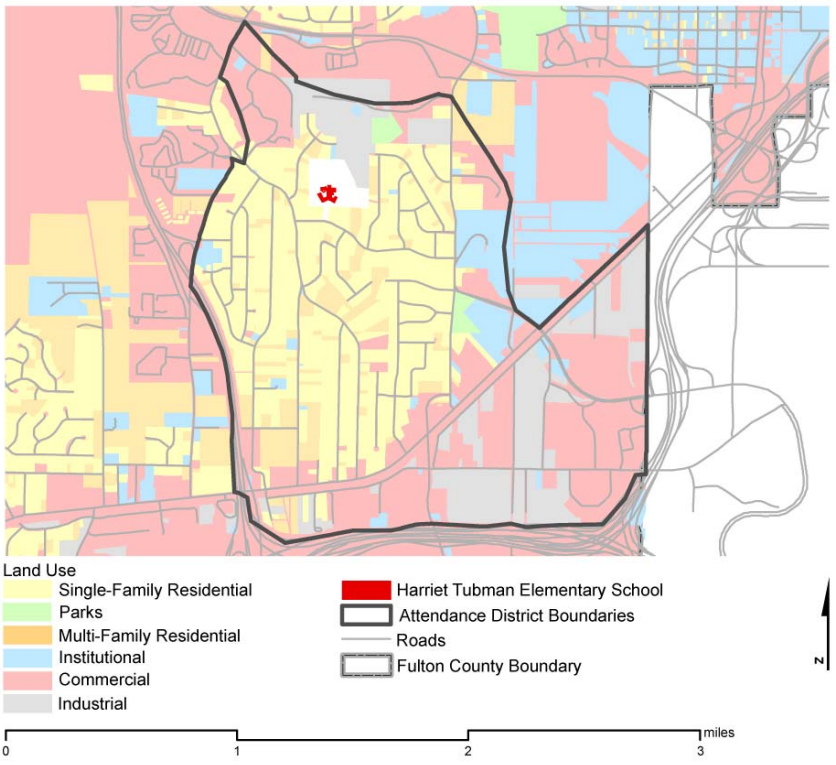
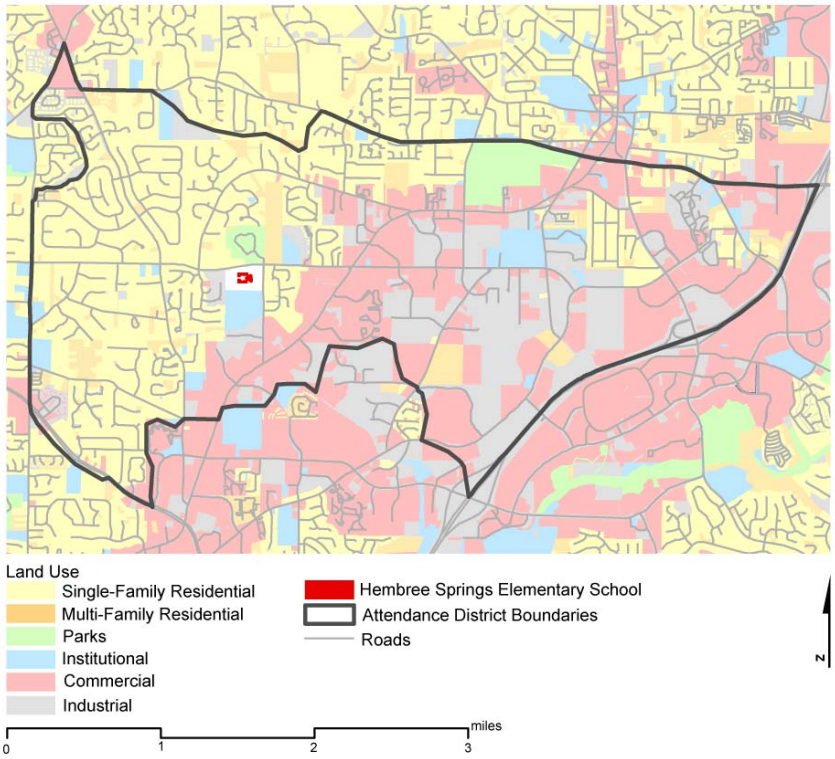


Figure 3.2: Elementary Schools Located on the Edge of Residential Areas





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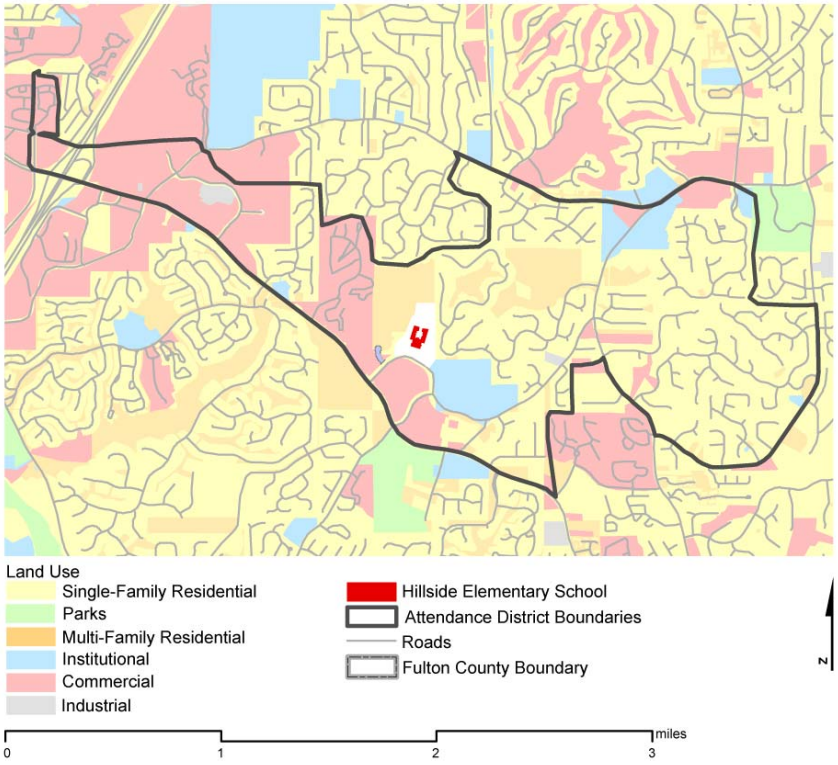

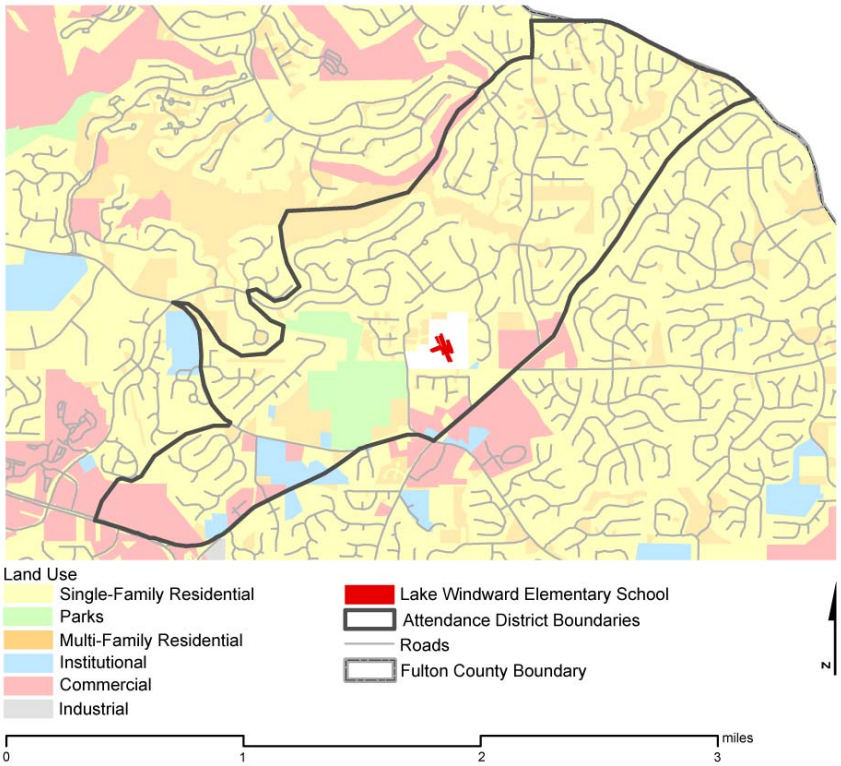

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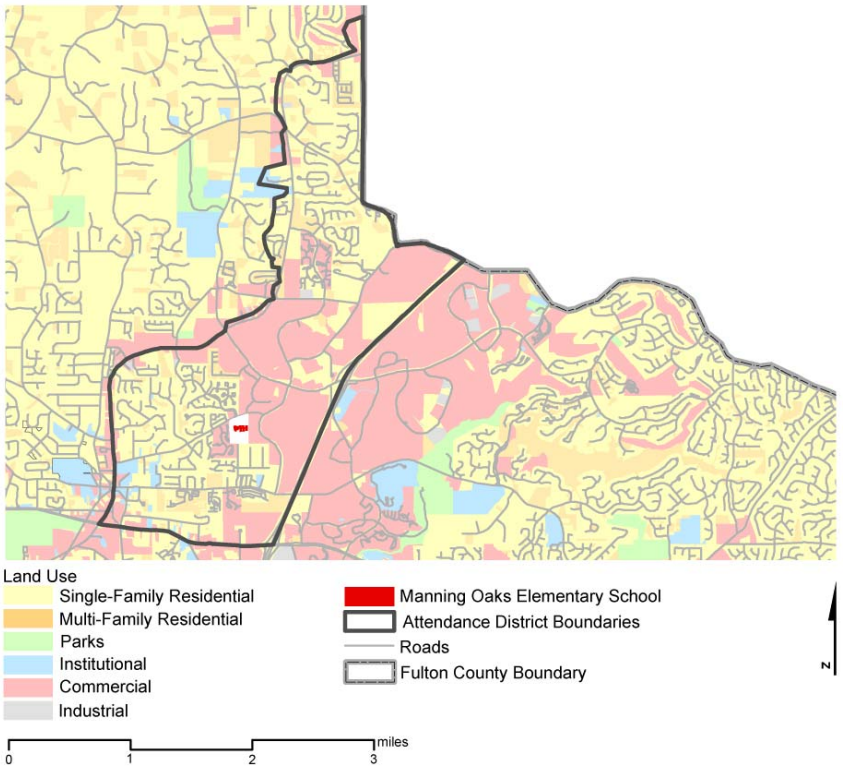

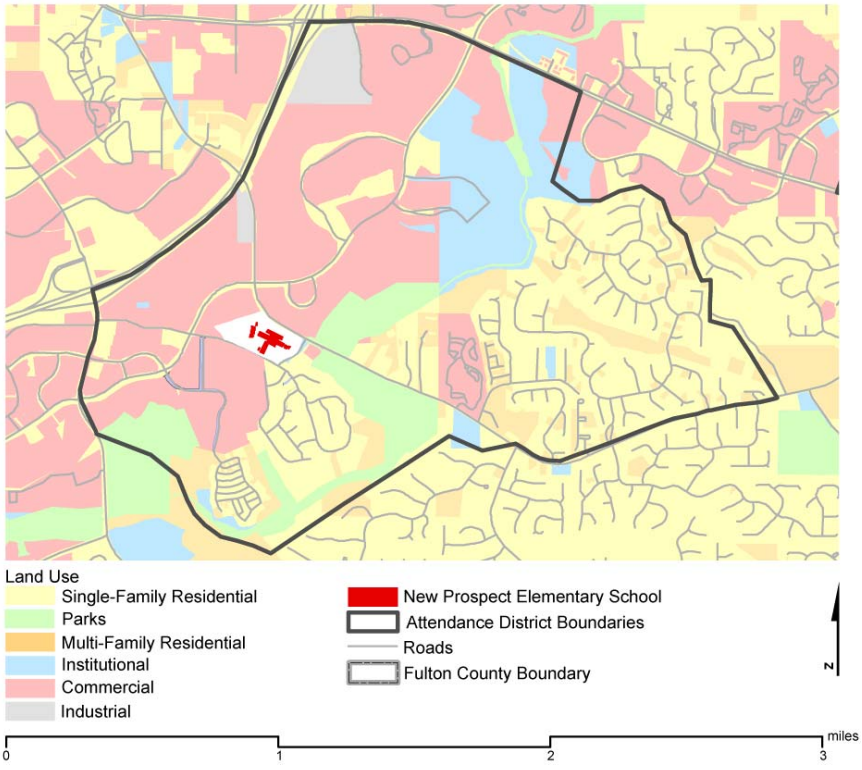

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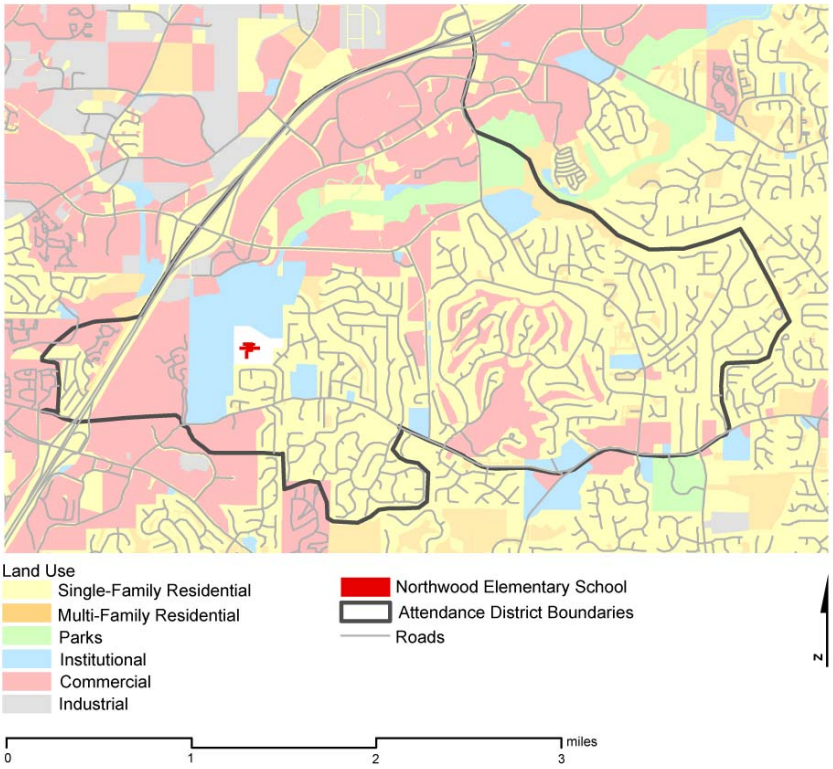


Figure 3.2: Continued

3.1.3 Barriers

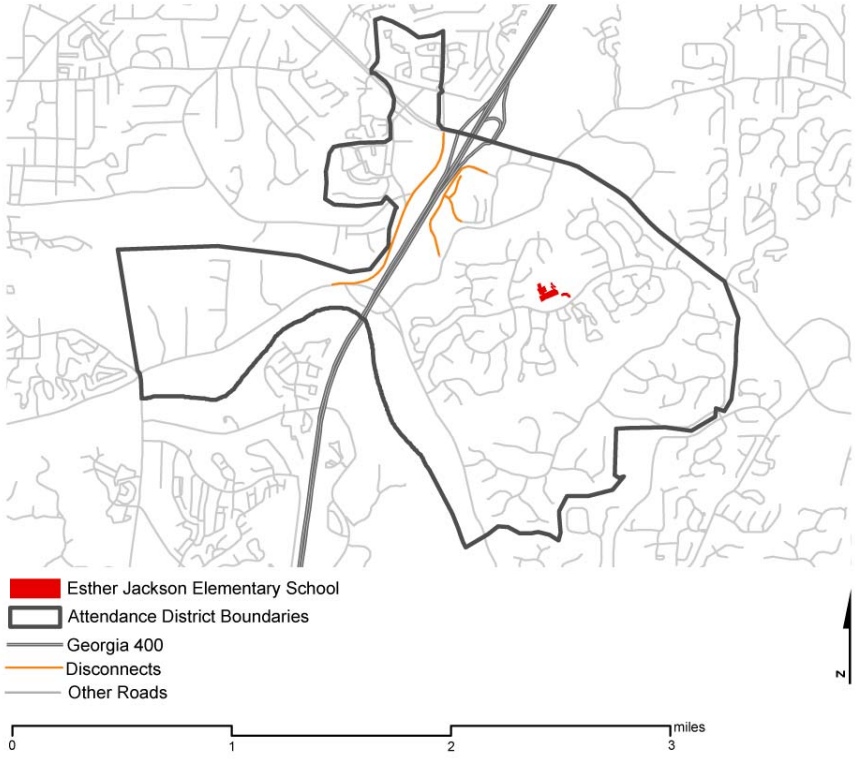
3.1.3.1 Interstate Highways

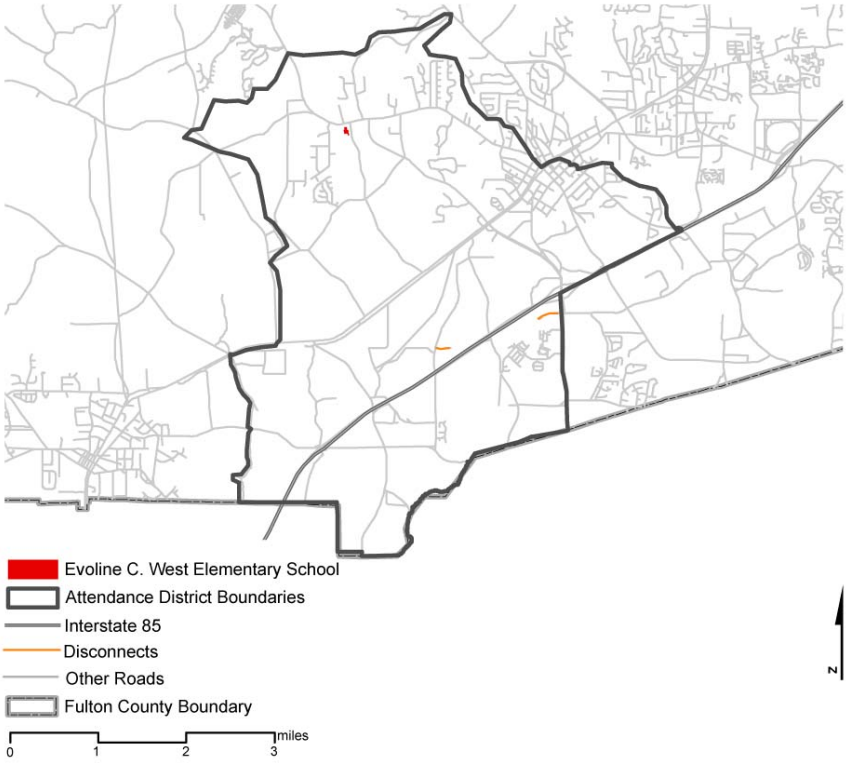
Ten attendance districts are bisected by interstate highways. One district is bisected by two highways. Interstate highways create a barrier and limit mobility across the district. Table 3.2 lists the districts that are restricted in this way. Figure 3.3 illustrates the disconnects to mobility across the district that are created by this major barrier.

Table 3.2: School Districts Bisected by Interstate Highways

Elementary School Name	Interstate that Bisects District
Brookview	Interstate 285
Dunwoody Springs	Georgia 400
Esther Jackson	Georgia 400
Evoline C. West	Interstate 85
Hapeville	Interstate 85
Heards Ferry	Interstate 285
Heritage	Interstate 85
High Point	Interstate 285 and Georgia 400
Northwood	Georgia 400
Woodland	Georgia 400

Figure 3.3: Disconnects Created by Interstate Highways





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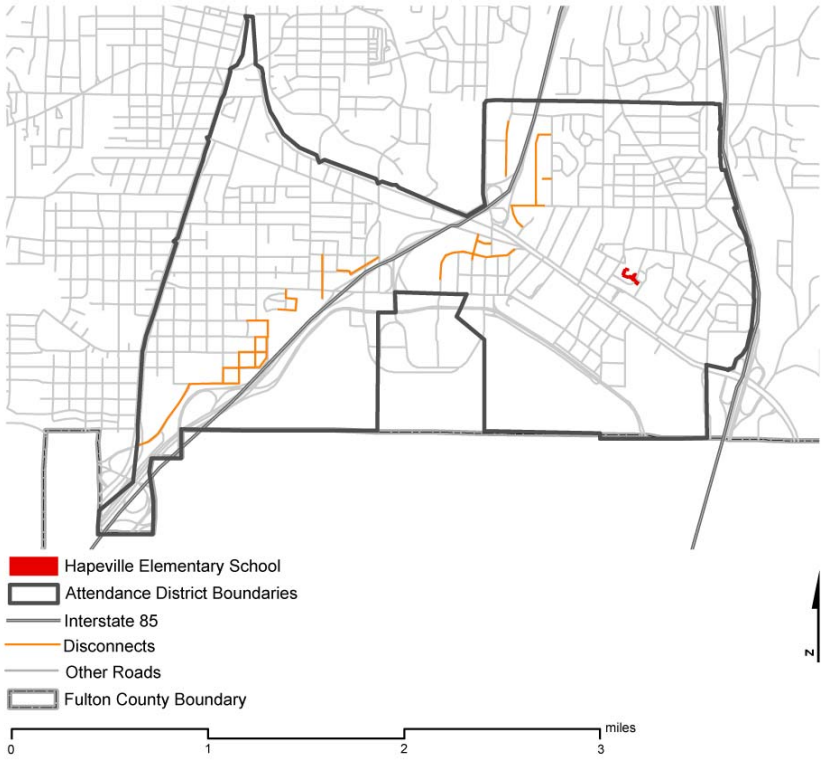

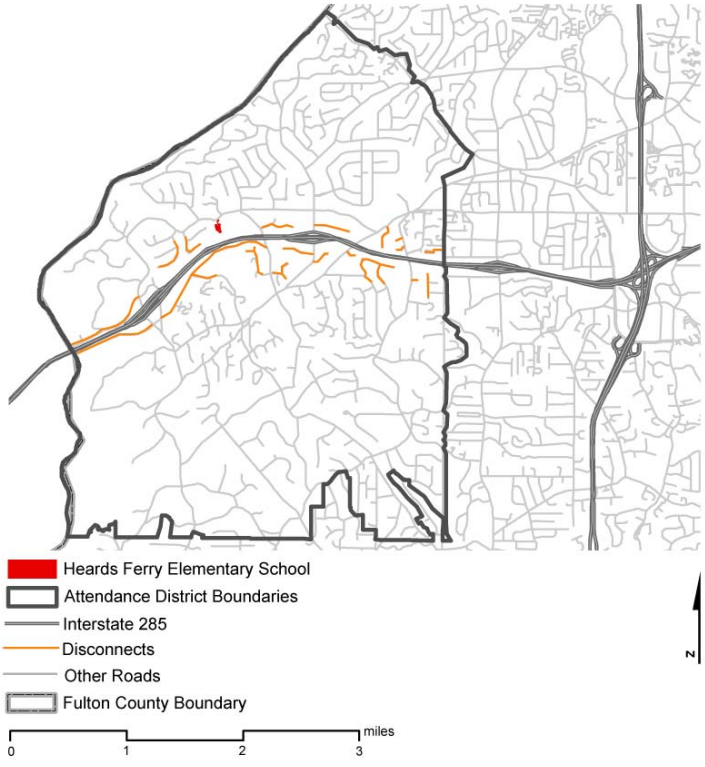

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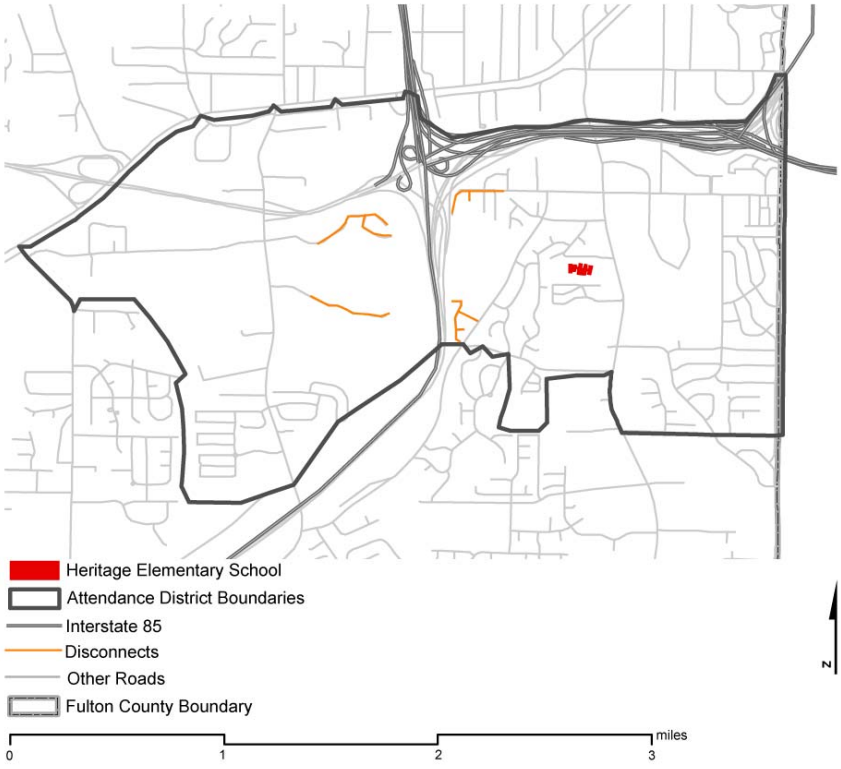

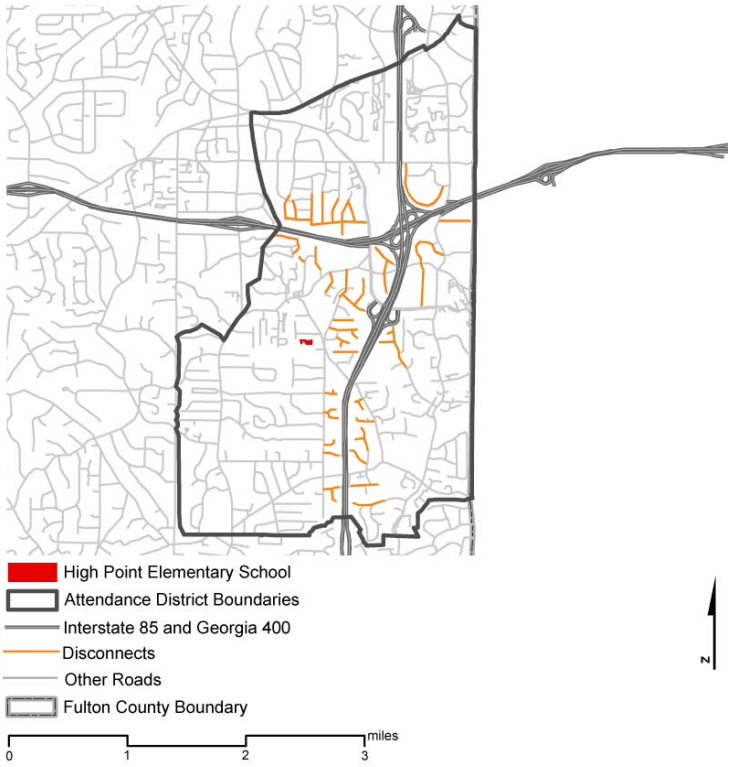

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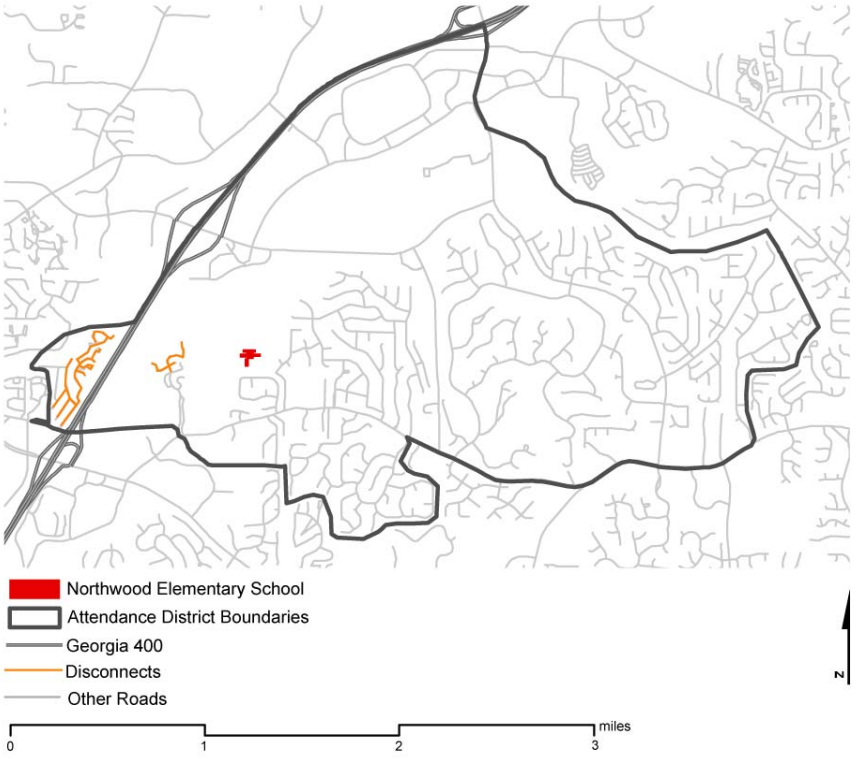


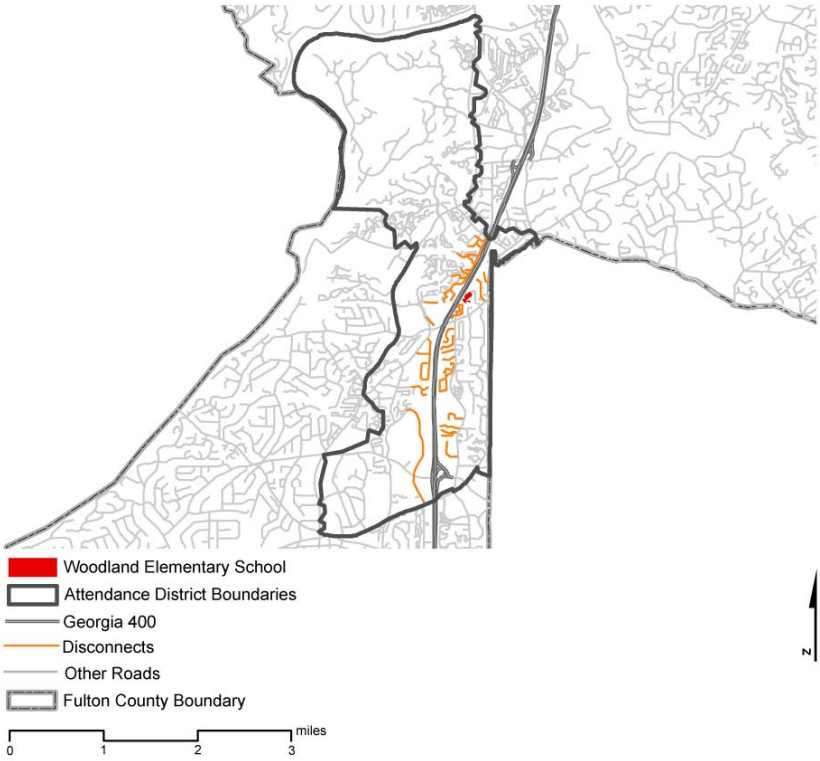


Figure 3.3: Continued

3.1.3.2 District Boundaries

If the school is located along the edge of a district boundary this creates another barrier type condition that restricts mobility and connectivity to the school from one direction. Three schools are located along the district boundary. If the school is located next to the district boundary, then students living on the other side of this line must travel longer distances to reach their school. The following Figure 3.4 illustrates the additional travel distance required by students because of this barrier.

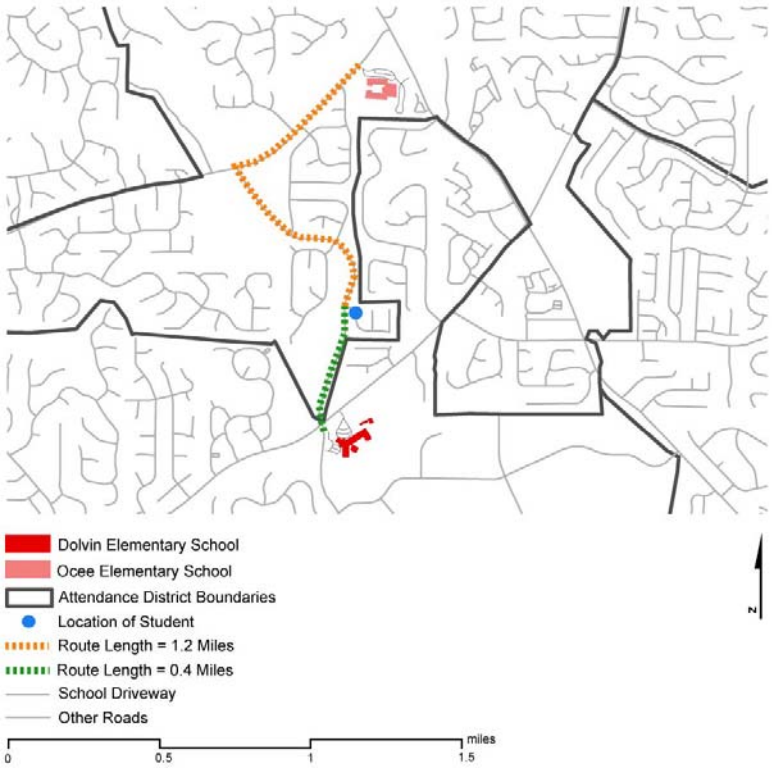
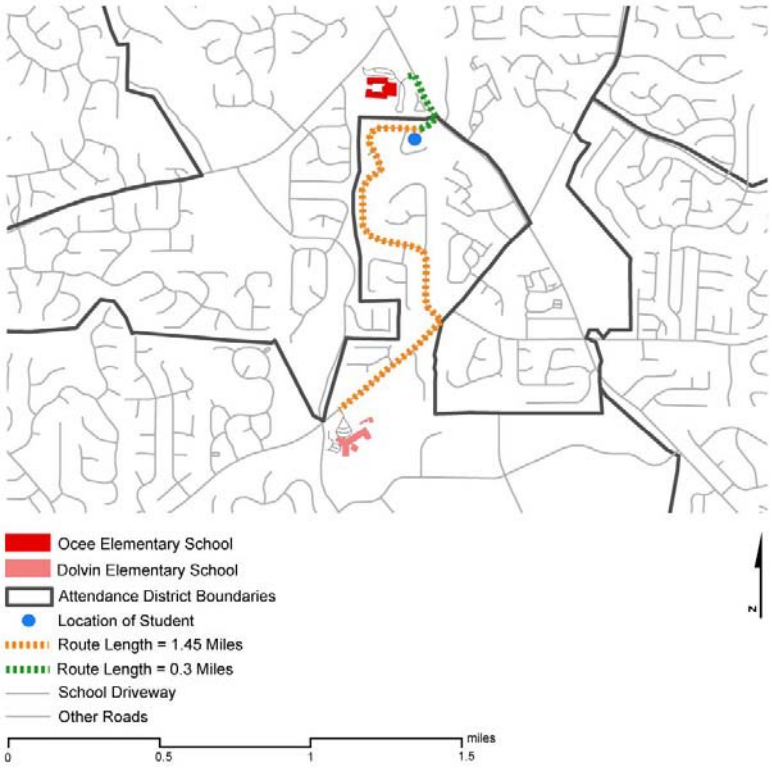


Figure 3.4: Schools Located on the Edge of Attendance District



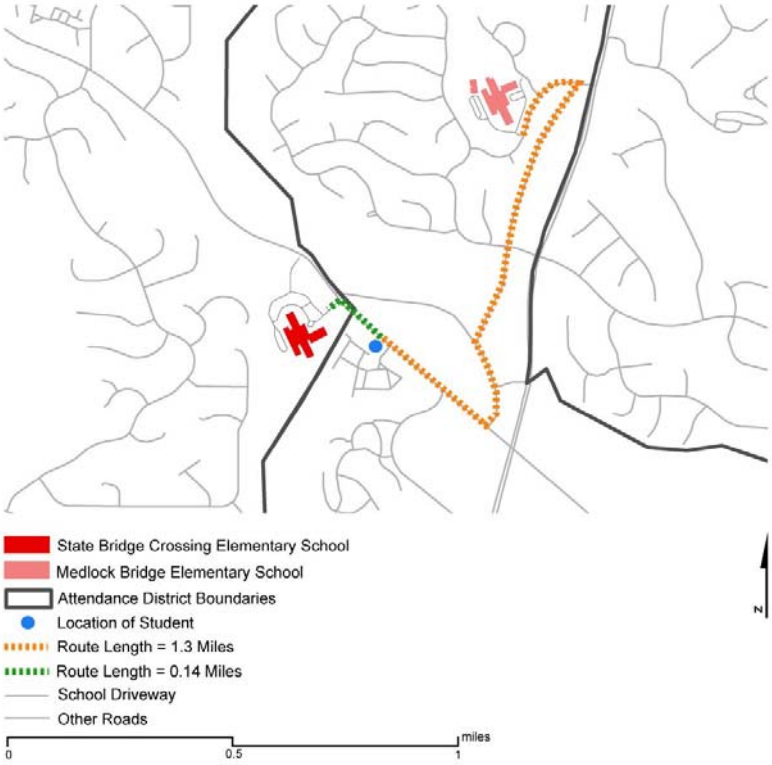


Figure 3.4: Continued

As can be seen, Dolvin Elementary School is located just south of the attendance district boundary. Therefore, the students that live essentially next door to the school must instead travel approximately 1.2 miles to the northeast to reach Ocee Elementary School. Likewise, the students who live adjacent to Ocee Elementary school must instead travel approximately 1.45 miles to reach Dolvin. Students who live adjacent to State Bridge Crossing Elementary School must travel 1.3 miles to reach their school, Medlock Bridge. These additional distances traveled are summarized in the following Table 3.3.

Table 3.3: Travel Distance Comparison for Schools on the District Boundary

Name of Elementary School Located on District Boundary	Adjacent District	Distance Comparison	
		Distance Currently Traveled by Student	Distance to Closer School
Dolvin	Ocee	1.2 miles	0.4 miles
Ocee	Dolvin	1.45 miles	0.3 miles
State Bridge Crossing	Medlock Bridge	1.3 miles	0.14 miles

3.1.4 Distance

All these site conditions lengthen the distance students must travel to reach their school. Longest distance traveled in each Fulton County attendance district ranges from 1.1 miles to 9 miles. A summary of the ranges of distances traveled is shown in Table 3.4. For a full list of distances and details refer to Appendix C, Table C.1.

Table 3.4: Longest Distances Traveled by Students

Distance Traveled	Number of Schools
< 2 miles	5
< 3 miles	21
< 4 miles	12
< 5 miles	9
< 6 miles	2
< 7 miles	3
9 miles	1

Since accessibility was not considered in the selection of these school sites, the long travel distances limit the modes of transportation available to students. The following Figure 3.5 graphically shows the four districts with the longest distances required for student travel. Palmetto Elementary School Attendance District and Summit Hill Elementary School Attendance District have been excluded, because these districts are primarily rural in nature and thus have lower density residential development that is sparsely and widely distributed.

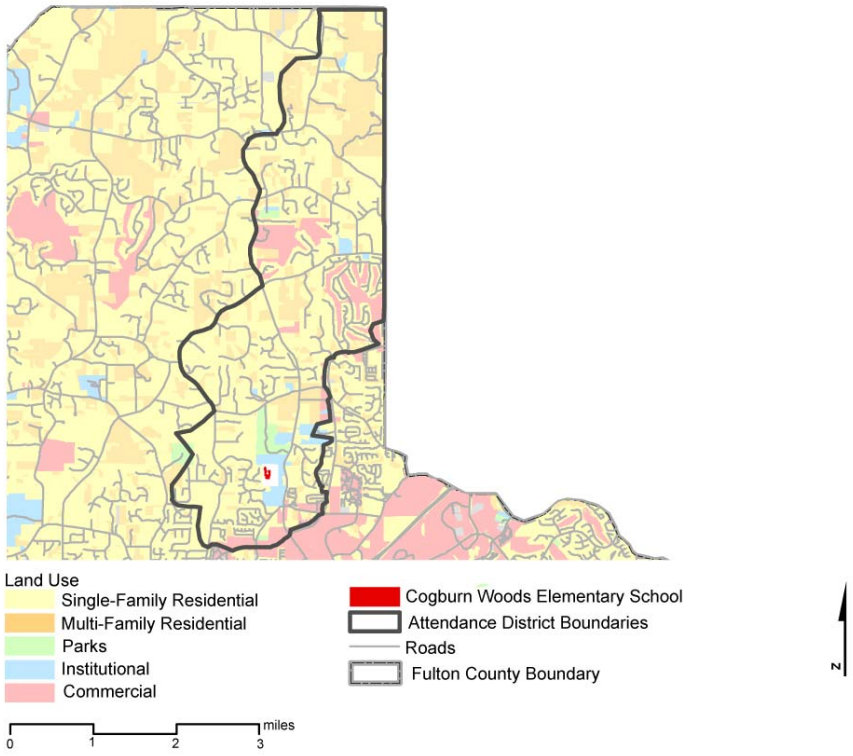
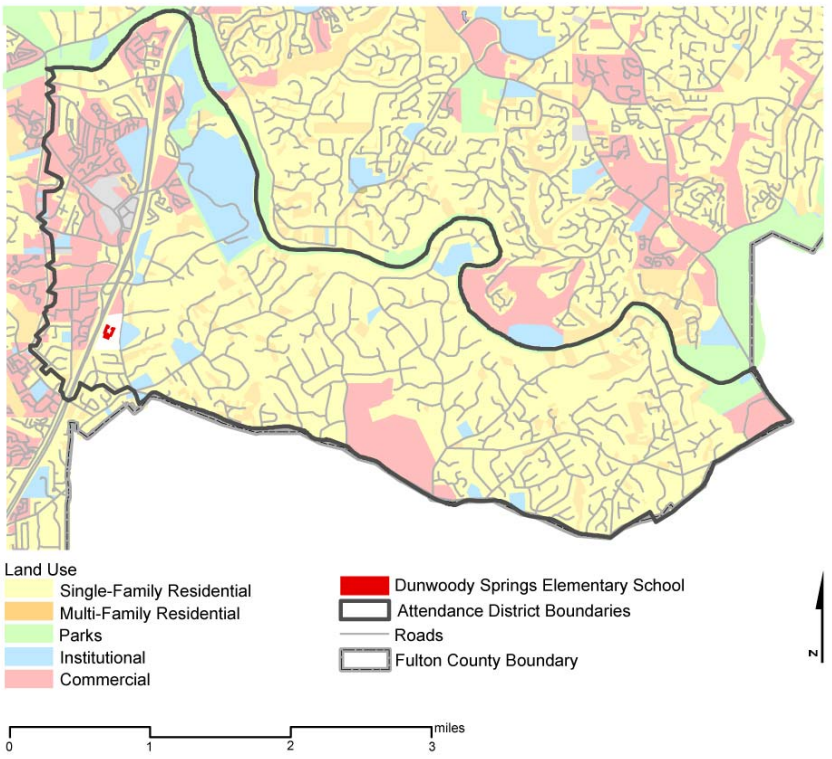


Figure 3.5: School Districts with Students Traveling the Longest Distances



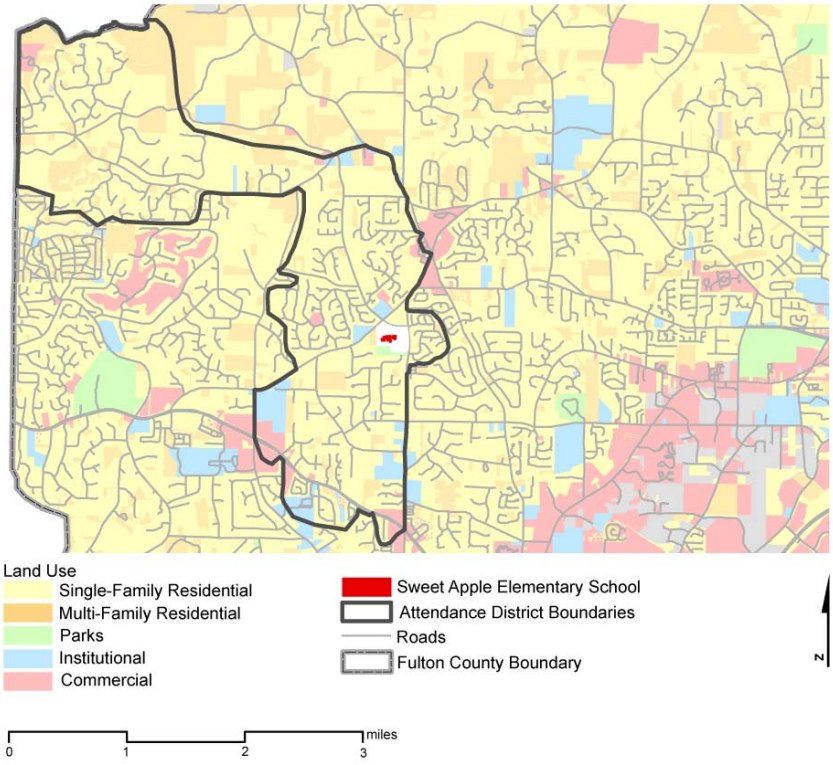


Figure 3.5: Continued

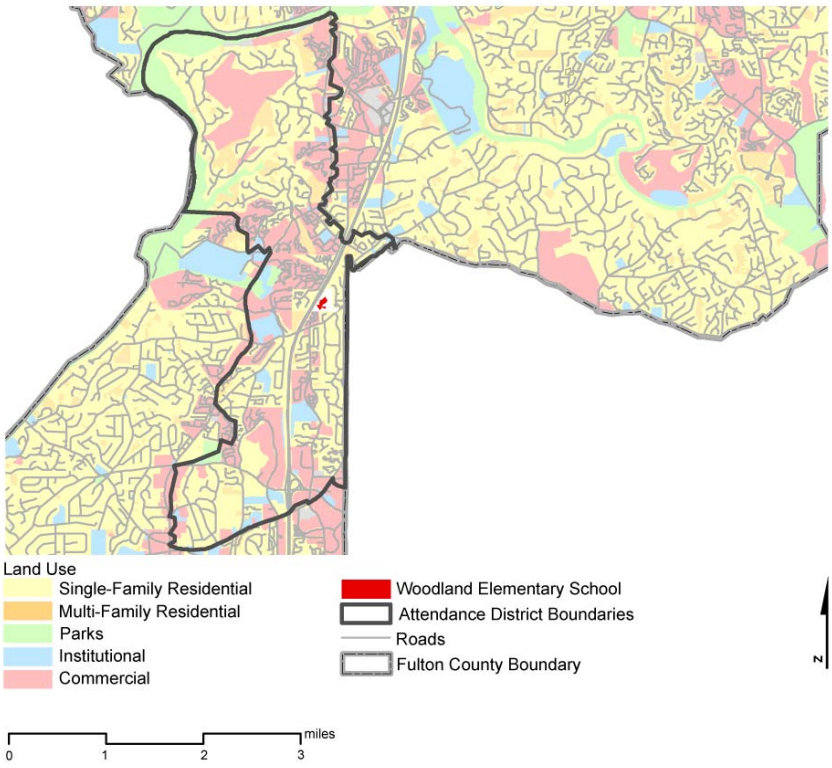


Figure 3.5: Continued

3.2 Quarter Mile Radius Analysis

Inaccessibility is also created by the conditions occurring along the school parcel boundary and extending outwards from the school up to a quarter mile radius. This distance was chosen as a very conservative estimate of the distance that a child could comfortably walk to school. This scale was also chosen for further study as a means to review the conditions relatively close to, but not actually on the site.

3.2.1 Residential Density

The schools must have a high number of households located in close proximity to the school for alternative modes of transportation to be a viable option. The number of households located within a reasonable walking distance of their elementary school in Fulton County is extremely low.[1] The number of households ranges from eight to 257. If the school is surrounded by low density residential development, or non-residential development, then only a limited number of households can live in close proximity to the school.

---

[1]The count was preformed by gathering the sum of single family residential structures that are located on R1 parcels within a .25 mile radius of the school. Some multi-family residential structures are also located within the .25 mile radius. These are not included, but generally all represent fairly low density 1 and 2 story apartment buildings and townhouses, and would therefore not significantly increase the count. Refer to Table C.2 in Appendix C for the exact count. These household counts were taken of simply the number of households located within this radius, without regard for the location of the attendance district boundary. If the households located in an adjacent district were excluded, the numbers would be even lower.

The following diagrams shown in Figures 3.6 and 3.7 illustrate the typical patterns of household distribution that result in higher and lower densities of households adjacent to the elementary school. The six schools which have the greatest density of households in close proximity to the school, and therefore are the most accessible are shown first, in Figure 3.6. These schools could have the highest numbers of students who are able to walk to school because they are potentially the most accessible. The six schools with the lowest density of households located in close proximity to the school are also the least accessible. The pattern of household development around the least accessible schools with the least amount of household density surrounding them is shown in Figure 3.7.

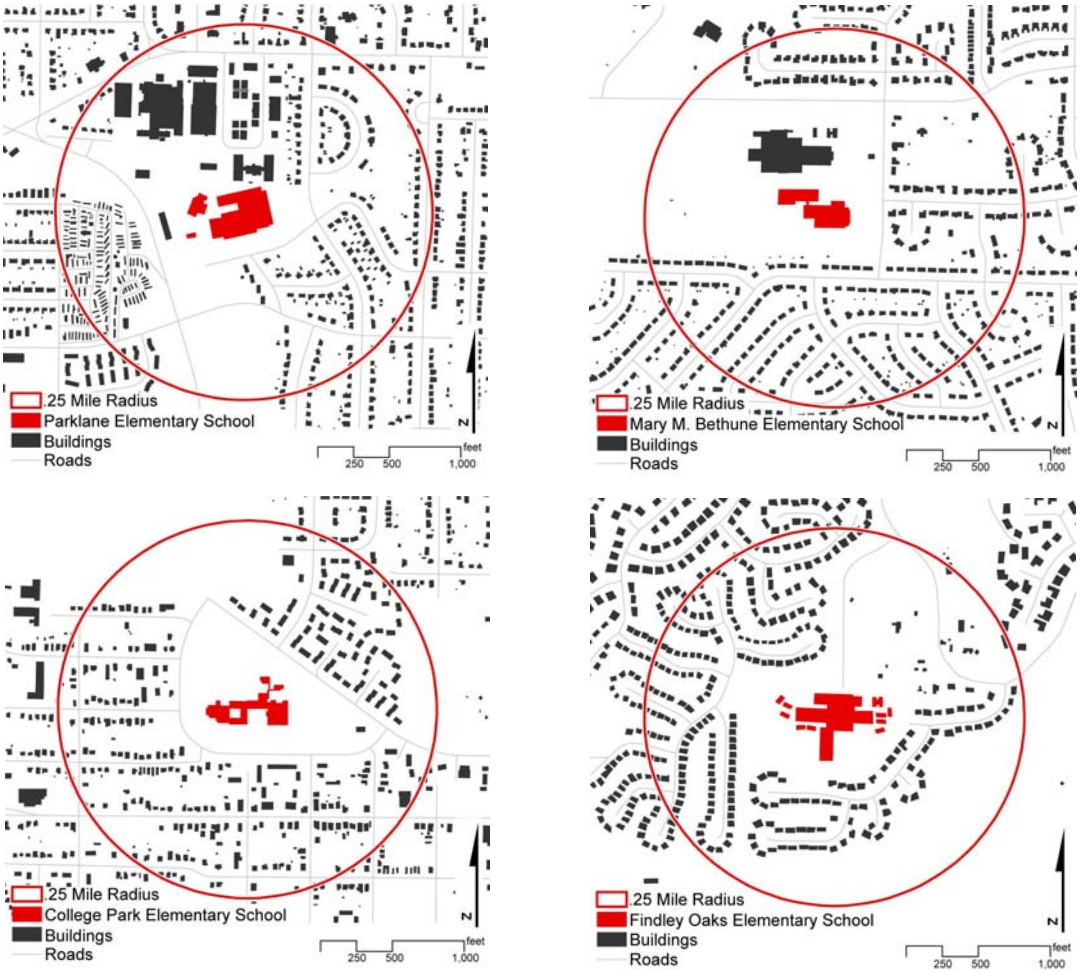
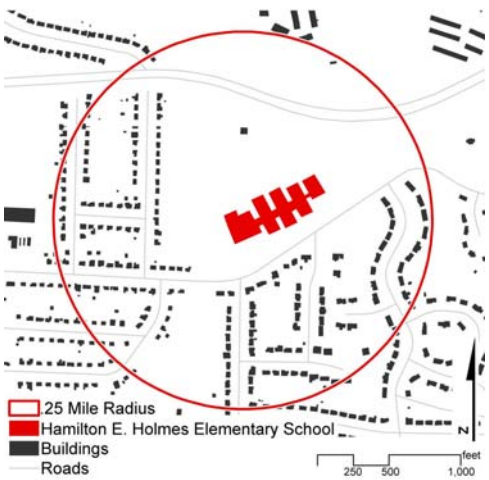


Figure 3.6: Elementary Schools with Highest Household Density



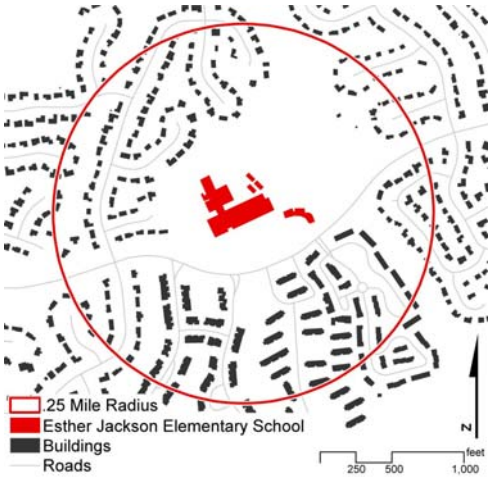
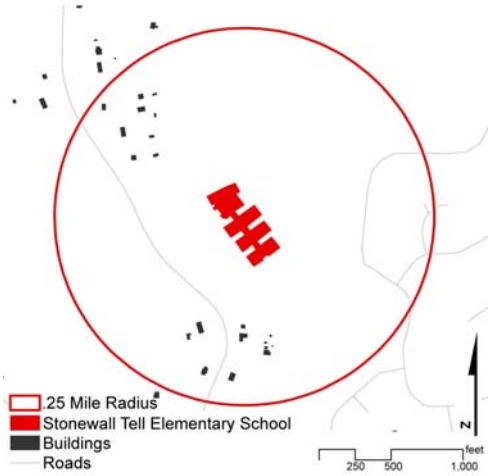
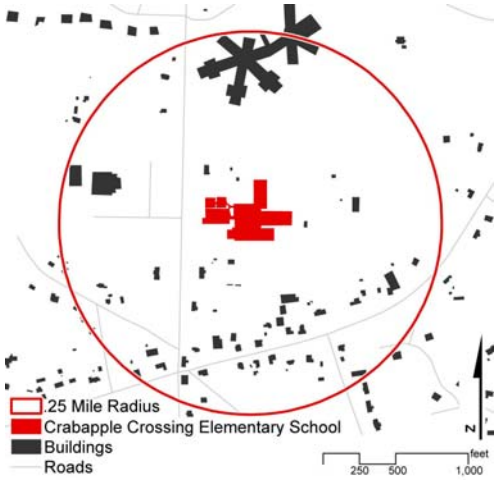
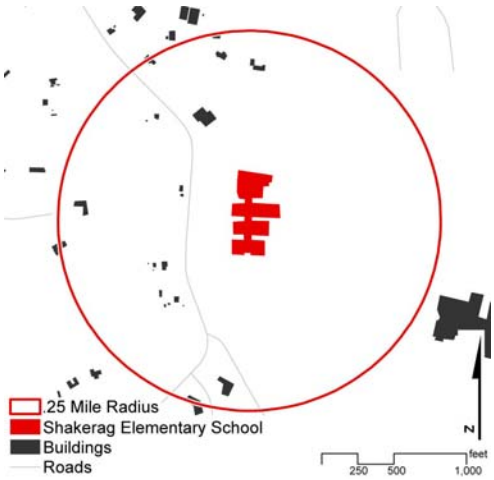


Figure 3.6: Continued







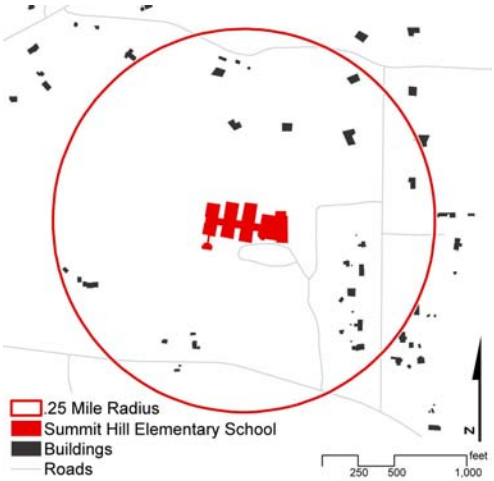


Figure 3.7: Elementary Schools with the Lowest Household Density

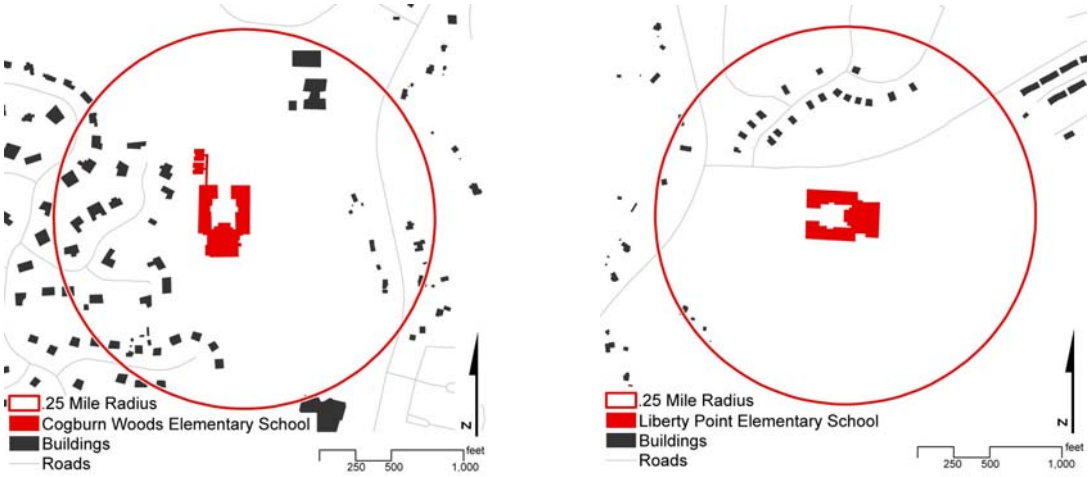


Figure 3.7: Continued

Although Findley Oaks Elementary School and Esther Jackson Elementary School appear as higher density according to the raw household count, this is somewhat misleading. It is true that there are a high number of households located geographically close to the school, which increases the potential accessibility of these schools. However, the cul-de-sac type development surrounding these schools creates a barrier to accessibility, as the private property located on the majority of the school parcel boundaries prevent children who live in these neighborhoods from having a short walk to school. A further discussion of this issue is provided in Section 3.2.3.1 Inaccessible Edges on page 42.

3.2.2 Land Use Adjacencies

3.2.2.1 Non-Residential

Schools are sometimes located next to zones of non-residential land use which lowers the number of households near the school. Fourteen of 53 schools are located adjacent to a non-residential land use parcel. Lower household density in close proximity to the school reduces the number of students that have the ability to walk to school, because the distances from their homes are lengthened, and facilities for

pedestrians are not as available. These non-residential land uses also often rely on major transportation routes, which are not suitable for walking or cycling. The following Figure 3.8, Non-Residential Land Uses Located Near Elementary Schools, shows undesirable land uses located adjacent to schools. The disruption and reduction of household structures near the school is clearly evident in these diagrams.

Although a total separation of commercial from residential land uses is not desirable, the quarter mile radius distance from the school is a zone of such close proximity to the school, that the land use and zoning designation should be only be either multi-family residential, or at the very least high density single-family residential. As the diagrams clearly illustrate, the schools located adjacent to non-residential uses are indicative of the larger problem, previously discussed in Section 3.1.2, which is that the school is often relegated to an edge condition, instead of the center of the residential area.

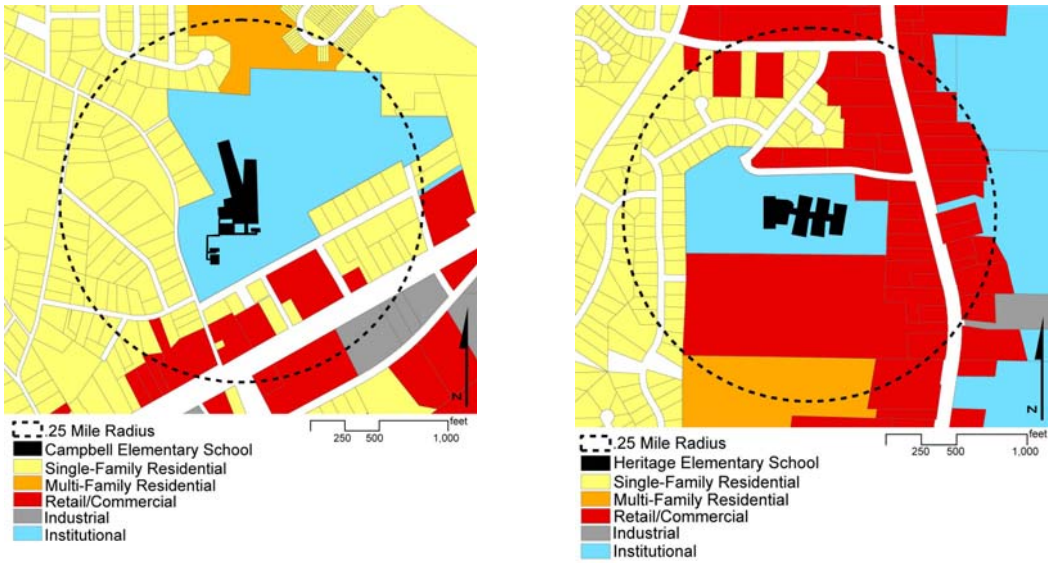


Figure 3.8: Non-Residential Land Uses Located Near Elementary Schools

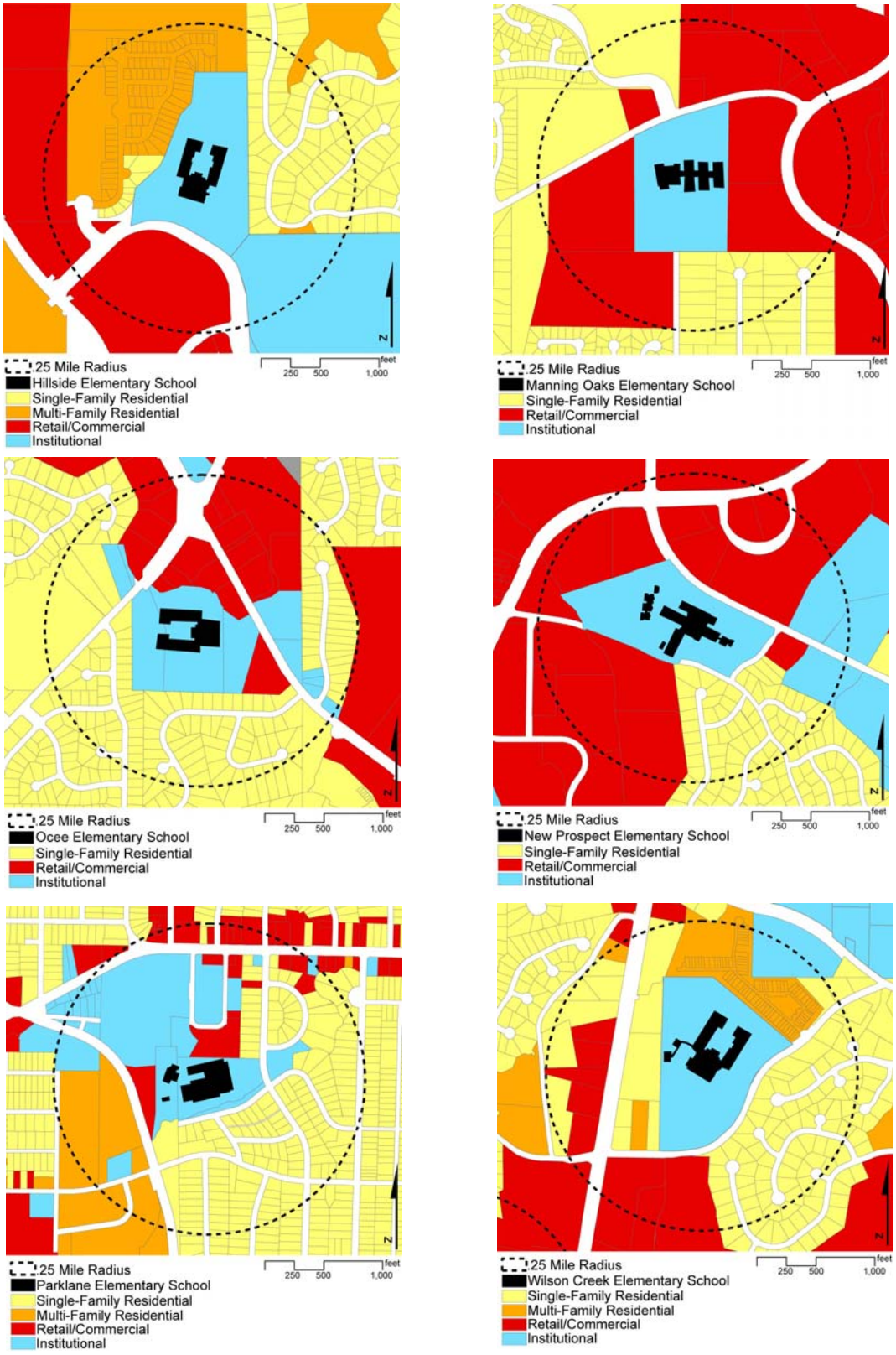


Figure 3.8: Continued

3.2.2.2 Schools

Large school parcels located adjacent to each other and sharing a parcel boundary disrupt the distribution of surrounding households, lower household density, and create a massive barrier to mobility. In the study area, four elementary schools are adjacent to a middle school, two elementary schools are adjacent to a high school and one elementary school has a middle school and a high school adjacent. The acreage minimums that were discussed in Chapter 2 are shown in Table 3.5, with the addition of the total acreage required for combined school sites. These numbers do not take into account the additional acres required according to the FTE counts, which are based on enrollment. The following Table 3.5 lists the acreage for each elementary school, middle school, and high school that are located adjacent to each other as a combined site.

Table 3.5: Minimum Acreage Requirements for Schools

Minimum Acreage Requirements	**Acres**
Elementary school	5
Middle School	12
High School	20
Combined School Sites	
Elementary school + Middle School	17
Elementary school + High School	25
Elementary school + Middle School + High School	37

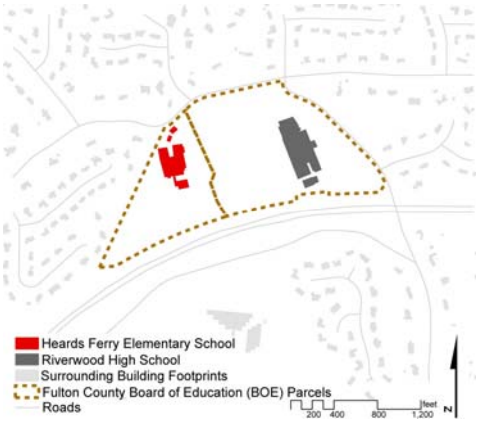
As the following Table 3.6 illustrates, when multiple schools are located adjacent to each other, the total acreage of the entire school site far exceeds the Department of Education minimum acreage requirements, as the largest of these school mega-sites has reached a total of over 140 acres.

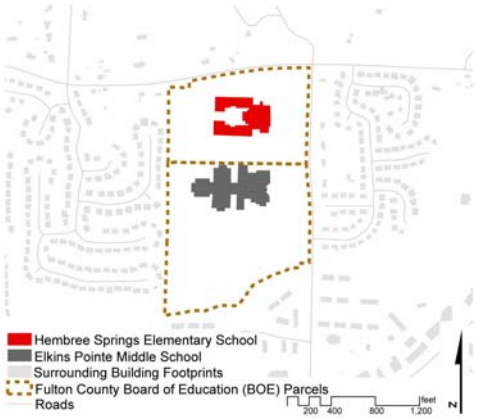
Table 3.6: Acreage Totals for Combined School Sites

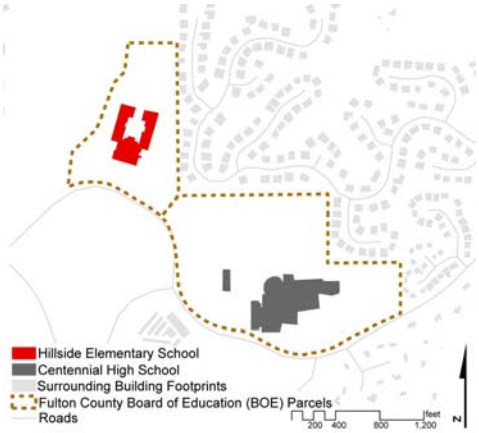
Elementary School Name	Adjacent Middle School or High School	Elementary School Parcel Acreage	Adjacent Middle School Parcel Acreage	Adjacent High School Parcel Acreage	Total Acreage for Entire School Site
Cogburn Woods	Hopewell Middle School	26.49	36.01	0.00	62.50
Crabapple Crossing	Northwestern Middle School and Freemanville Road High School	15.76	50.38	74.26	140.40
Heards Ferry	Riverwood High School	17.17	0.00	32.21	49.38
Hembree Springs	Elkins Pointe Middle School	23.33	35.27	0.00	58.60
Hillside	Centennial High School	23.06	0.00	50.02	73.08
Mary M. Bethune	Ronald E. McNair Middle School	13.97	39.64	0.00	53.61
Shakerag	River Trail Middle School	37.35	67.78	0.00	105.13

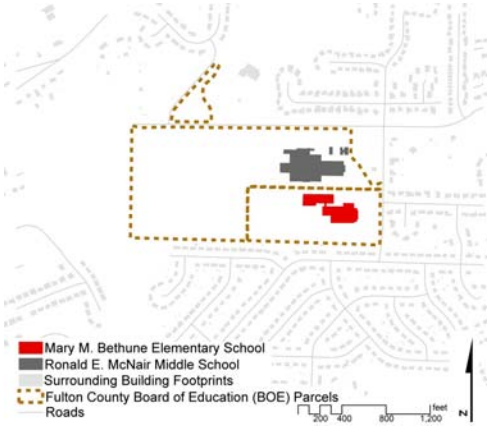
Large acreage combined school sites create a barrier to accessibility and reduce household density. The diagrams shown in Figure 3.9 illustrate how these combined school sites and high acreage parcels disrupt the distribution of surrounding households.

Figure 3.9: Multiple Schools Grouped on Adjacent Sites









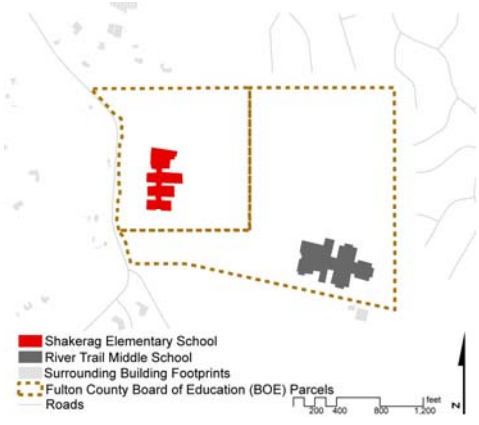


Figure 3.9: Continued

3.2.2.3 Parks

Large undevelopable park land located within a quarter mile radius of a school reduces the number of households located in close proximity to the school, and creates a barrier to mobility. In the study area, 13 schools are located adjacent to public parks. The amount of park acreage located within a .25 mile radius of the schools ranges from 0.3 acres to 46.19 acres. Five of these school and park sites have shared facilities or a direct connection, or both. The following Table 3.7 lists the type of park, the acreage of the park in close proximity to the school, and the relationship of the park to the school.

Table 3.7: Elementary Schools Located Adjacent to Public Parks

Elementary School Name	Name of Facility	Type of Facility	Jurisdiction/ Management	Acreage of Park Located within Radius of the School	Shared?
A. Philip Randolph	Sandtown Park	County Park	Fulton County	46.19	Yes
College Park	Bill Evans Field and Brady Recreation Center	Recreational Facility	City of College Park	3.68	No
Creek View	Big Creek Greenway	Greenway	City of Alpharetta	6.11	No
Hapeville	Hoyt Smith Recreation Center	Recreational Facility	City of Hapeville	23.96	Yes
Hembree Springs	Hembree Park	Recreational Facility	City of Roswell	18.99	No
Lake Windward	Webb Bridge Park	Municipal Park	City of Alpharetta	3.94	No
Love T. Nolan	Creel Park	Community Park	Fulton County	6.60	No
Mary M. Bethune	Burdett Park and Tennis Center	County Park	Fulton County	13.04	No
Mountain Park	Leita Thompson Memorial Park	Community Park	City of Roswell	21.09	No
New Prospect	Big Creek Greenway	Greenway	City of Alpharetta	9.70	Connected by a trail system
Parklane	Blount Park	Community Park	City of East Point	1.36	No
Roswell North	Roswell Area Park	Recreational Facility	City of Roswell	40.68	Yes
Sweet Apple	Sweet Apple Elementary School	Community Park	City of Roswell	11.36	Yes

The diagrams shown in Figure 3.10 graphically illustrate the relationship between the elementary schools and the adjacent public parks.

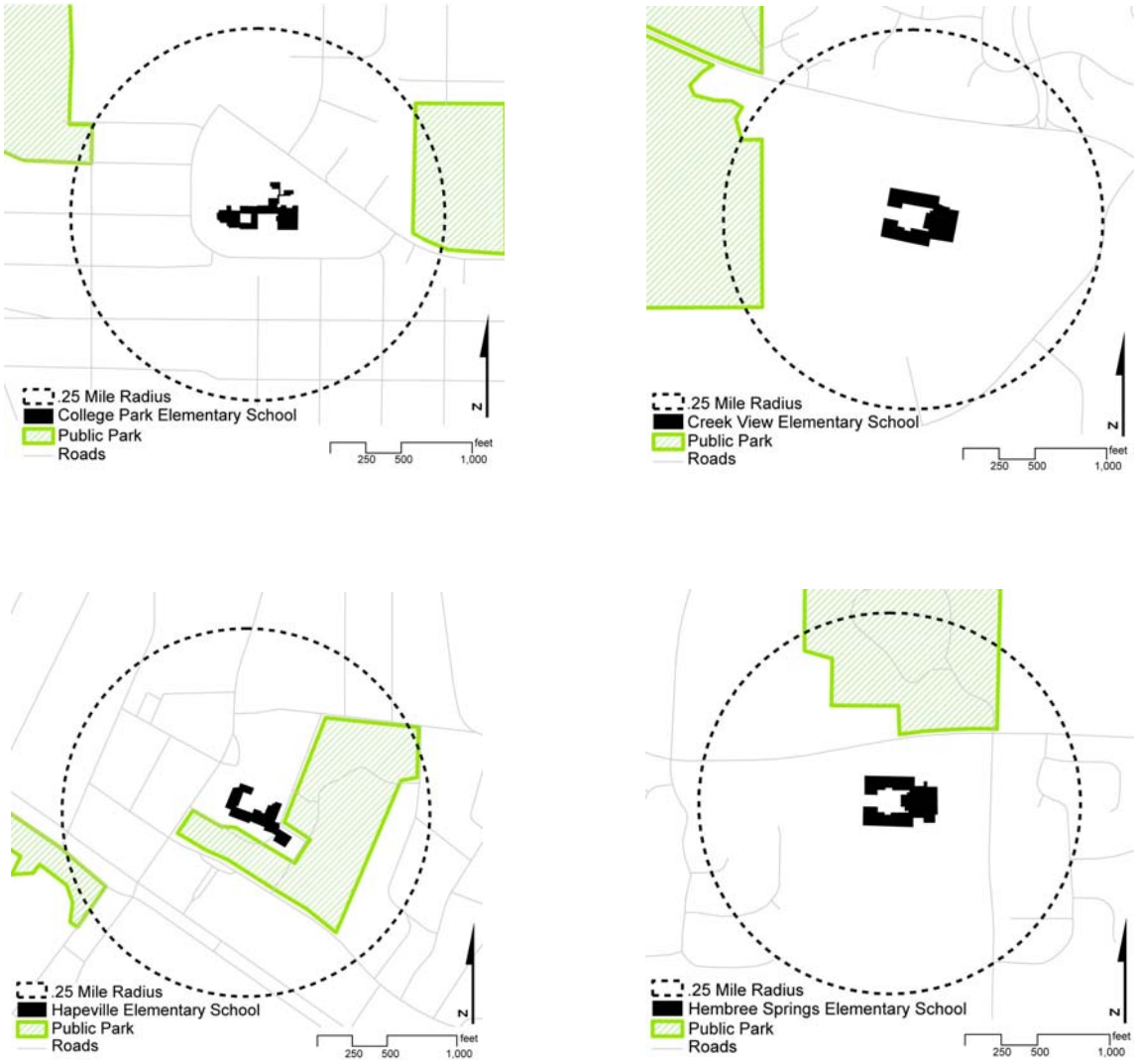
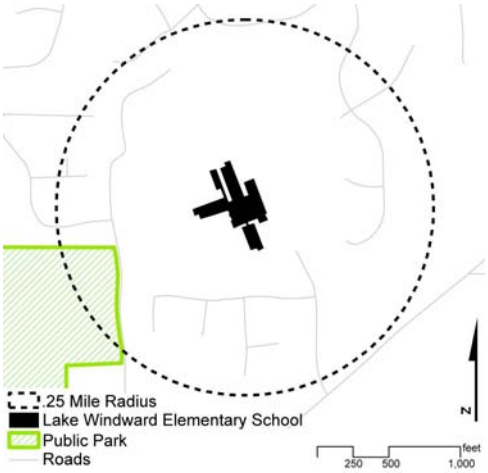
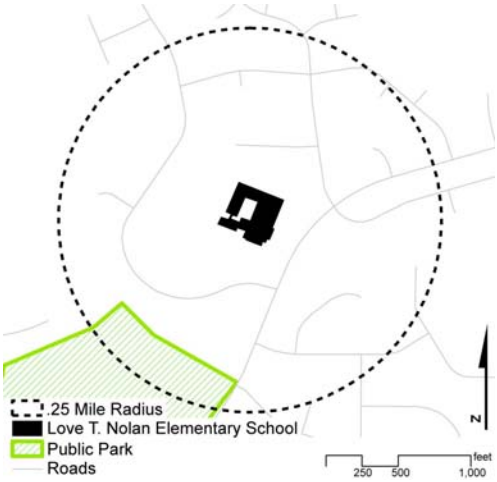
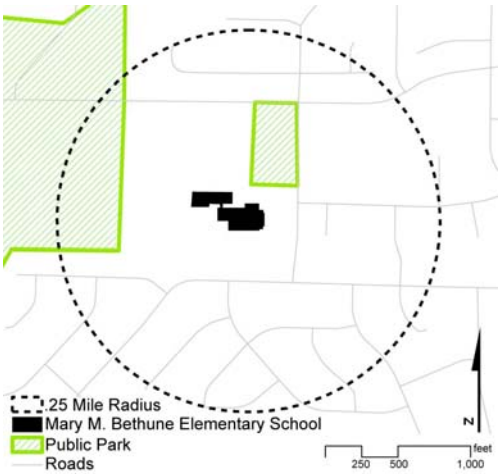
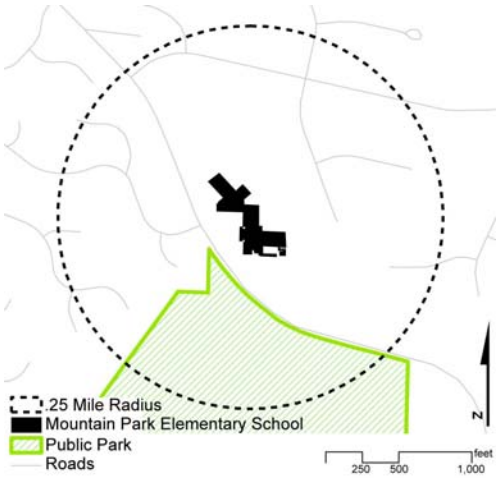


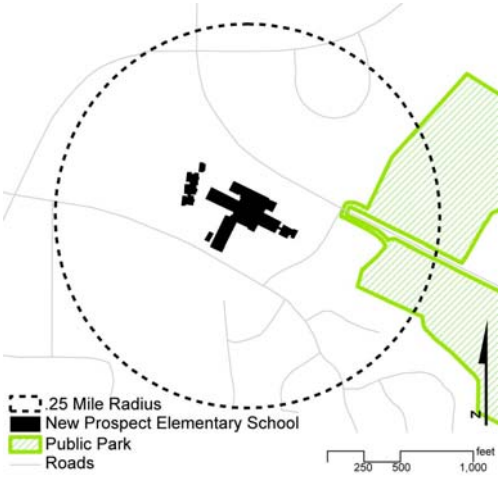
Figure 3.10 Elementary Schools Located Adjacent to Public Parks











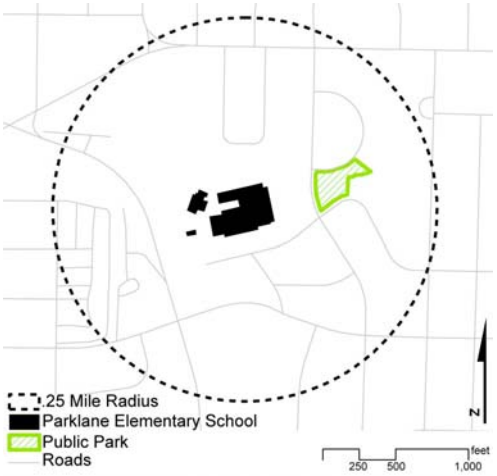
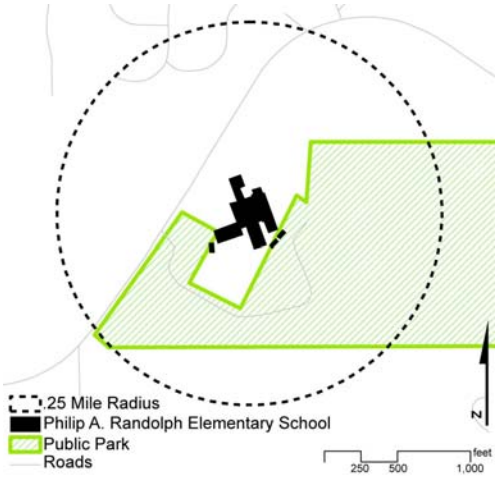
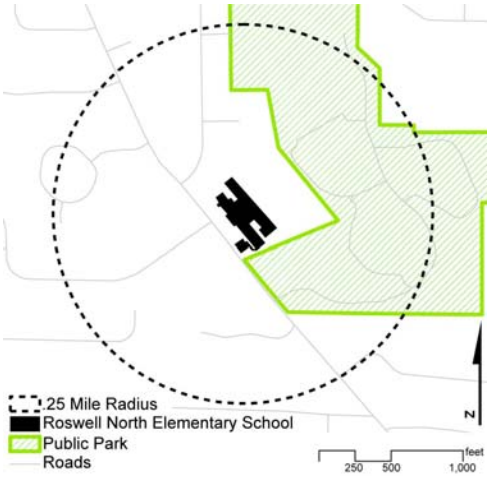


Figure 3.10: Continued





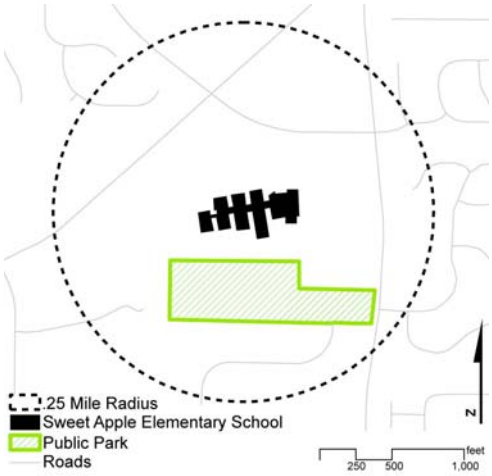


Figure 3.10 Continued

In some cases the location of a park adjacent to a school could be desirable, but only if the school and park area is planned as a shared facility. For example, at the A. Philip Randolph Elementary School, Hapeville Elementary School, Roswell North Elementary School, and Sweet Apple Elementary School, the school and the park do have a relationship with each other and the facilities are shared. New Prospect Elementary School and Big Creek Greenway are connected by a trail system.

3.2.3 Barriers

Multiple barriers to accessibility can be found within a quarter mile radius of the school. One type of barrier is created when continuous private lots share a parcel boundary with the school, which results in inaccessible edges. Barriers also include linear physical conditions, usually associated with incompatible land use, adjacent to the school.

3.2.3.1 Inaccessible Edges

The type of block surrounding the school has an influence on school accessibility. Three types of blocks are found in the study area: irregular, grid, or a combination of the two. The irregular blocks type is characterized by dead end cul-de-sac development patterns, while the grid block type is characterized by streets which connect in an orthogonal pattern. Examples of each are shown in Figure 3.11.

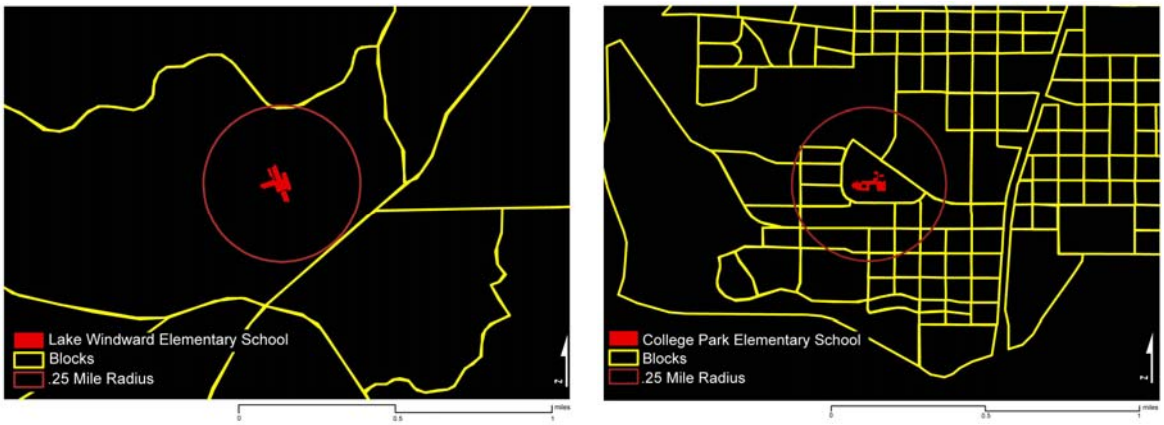


Figure 3.11: Block Types

The irregular type blocks are much larger than the grid type blocks, and this fact alone creates longer travel lengths and less accessibility for students. Irregular blocks also create more inaccessible edges around school, because the irregular blocks are characterized by cul-de-sac type developments. The inaccessible edges are created when cul-de-sacs dead end at the school, and create a pattern of unbroken private

parcels along the school parcel boundaries. The existence of this condition is another reason the irregular block type requires longer trips, as students must navigate around the inaccessible edges and dead end cul-de-sacs to reach their school.

The grid block type is characterized by a pattern of roads which connect along the edges of the blocks, and the blocks are smaller, which when located next to a school, creates more road frontage. The most accessible schools have multiple access points from a number of directions. This is easier to achieve if the school is surrounded by a greater amount of road frontage. The following diagrams in Figure 3.12 illustrate a school surrounded by irregular blocks with few access points, and a school surrounded by grid blocks with many access points.

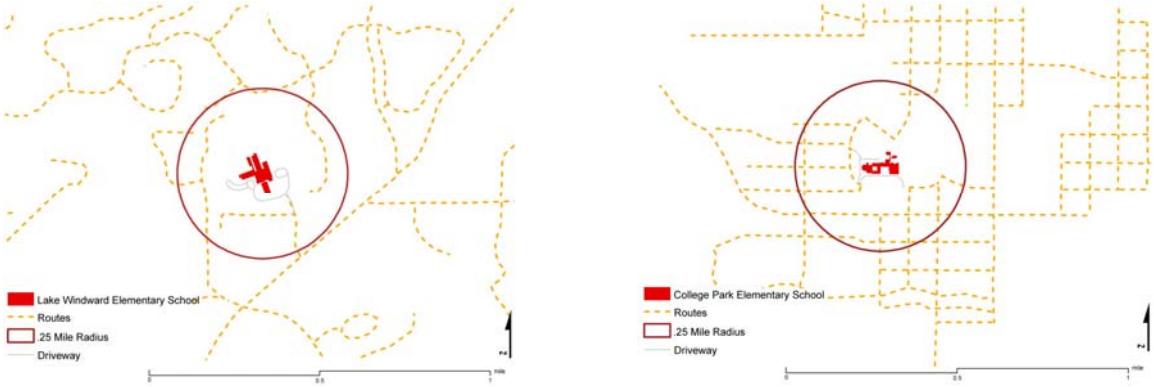


Figure 3.12: Major Routes and Accessibility

The six schools with the greatest number of private residential parcels sharing a school boundary and the least amount of road frontage are surrounded by irregular block type development, which result in inaccessible edges along most of the school boundaries. Figure 3.13 illustrates these conditions. As Figure 3.13 also shows, the single family residences located along the inaccessible boundaries of the school are

created by cul-de-sacs and are oriented such that the private backyard areas of the homes face the public facades of the school.

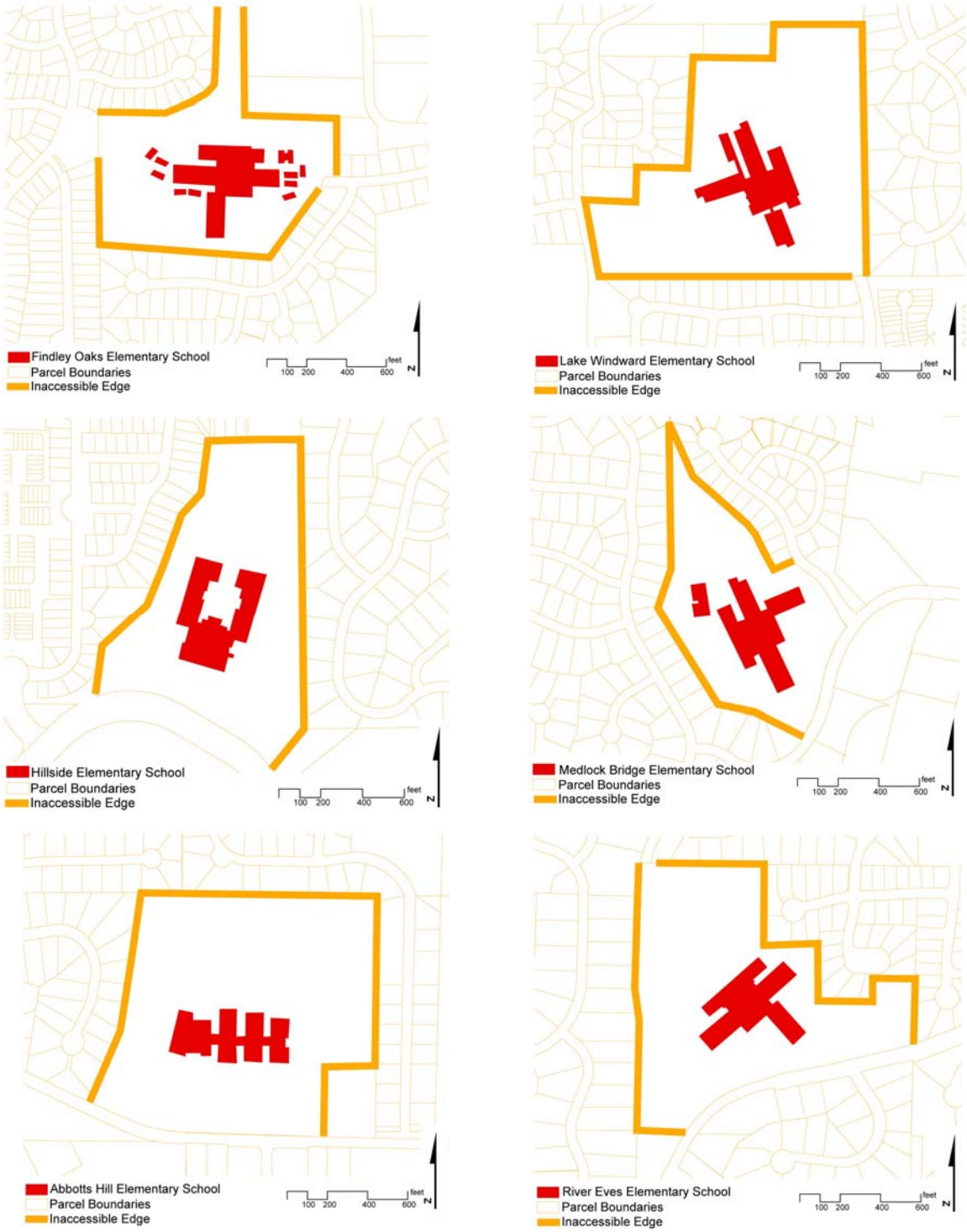


Figure 3.13 Irregular Block Type and Inaccessible Edges

For comparison, Figure 3.14 shows five elementary schools which are surrounded by the grid type block structure. With the exception of Hamilton E. Holmes Elementary School, the grid type block structure provides many more linear feet of accessible edges to the school, because more road frontage is created with this block pattern. Schools with large parcels of adjacent non-residential land use have not been included in this analysis.

Figure 3.14 Grid Block Type and Inaccessible Edges

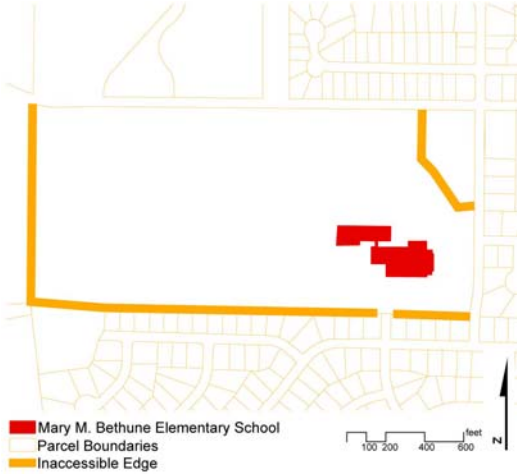
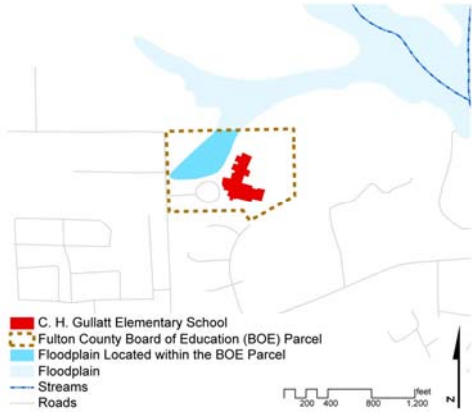
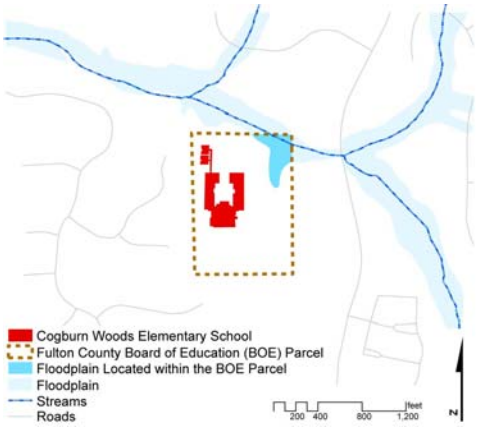


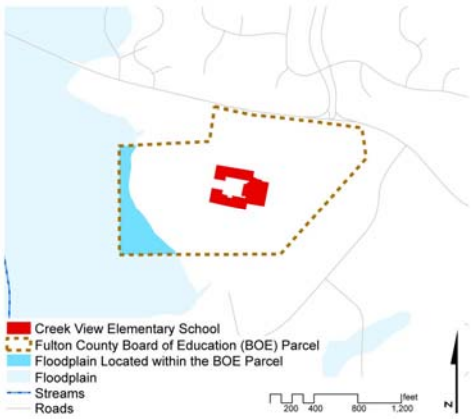
Figure 3.14 Continued

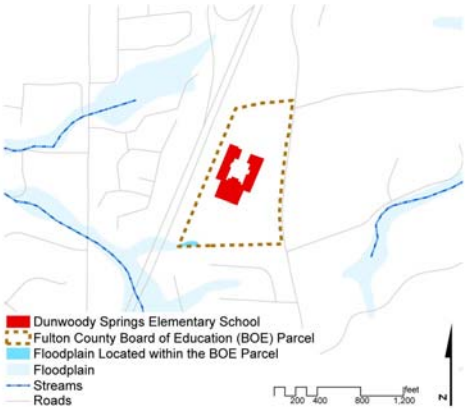
3.2.3.2 Streams and Floodplain

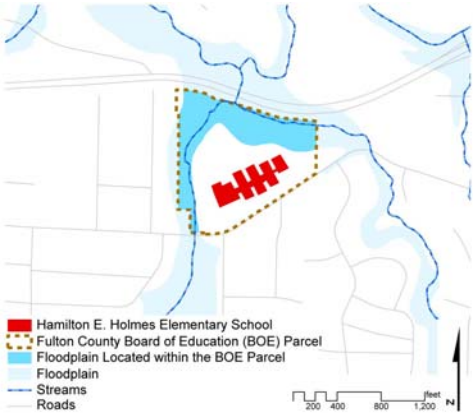
Streams and floodplains reduce school accessibility for two reasons. Streams create a linear physical barrier that cannot be easily crossed along one boundary of the school. Second, if there is a floodplain area associated with the stream, then the land adjacent to the school is undevelopable so households are pushed farther away from the school, resulting in longer distances of travel for students. Seventeen of 53 school site parcels are partially located in the floodplain. For this data analysis, both the 100 year and 500 year floodplain were included. The following Figure 3.15, Elementary School Sites Partially Located in the Floodplain, shows the relationship of the school to the adjacent stream and floodplain.











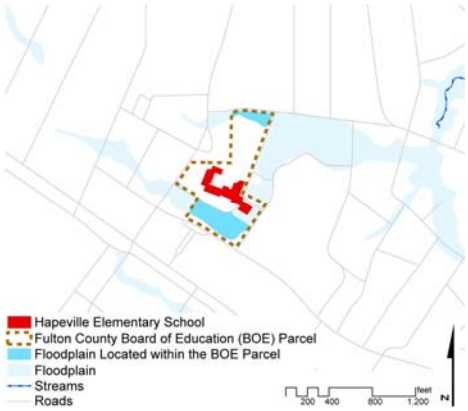
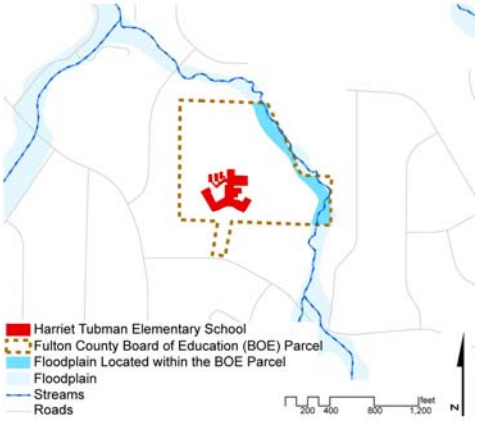
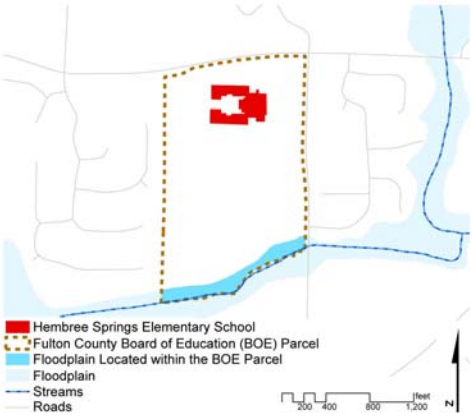
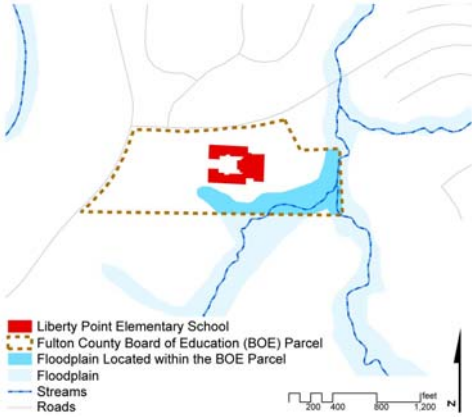
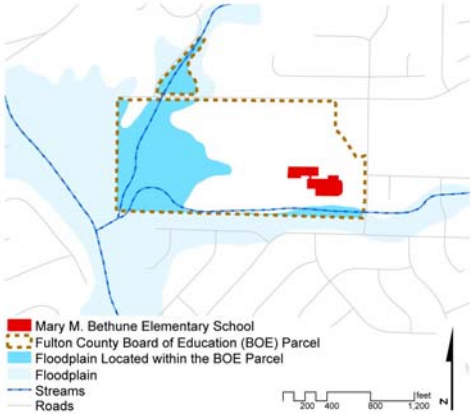


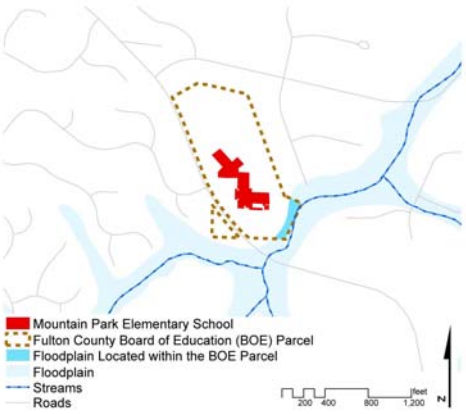
Figure 3.15: Elementary School Sites Partially Located in the Floodplain











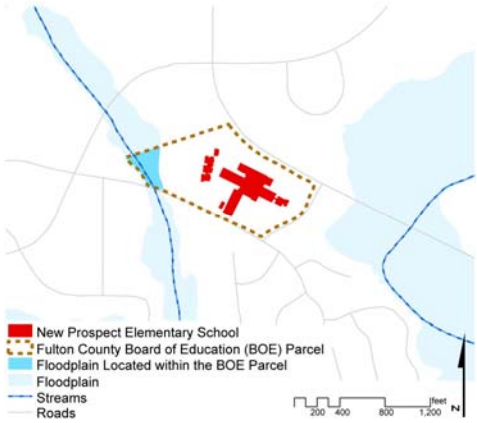
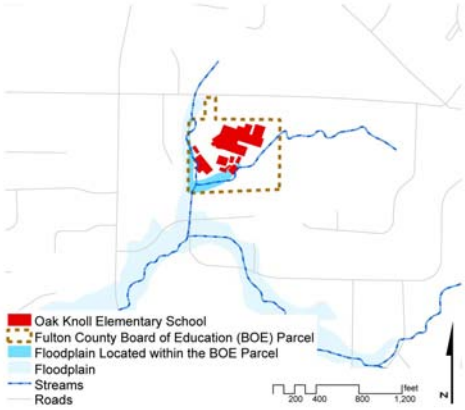
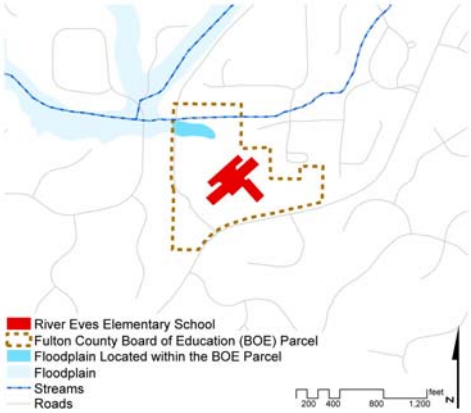
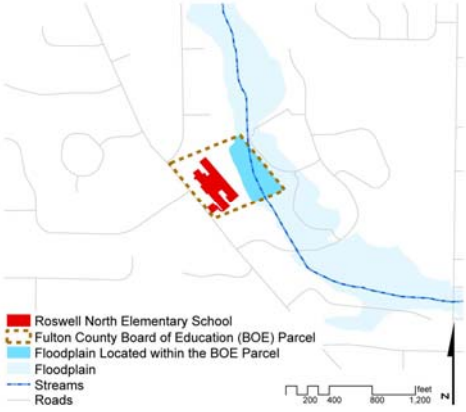
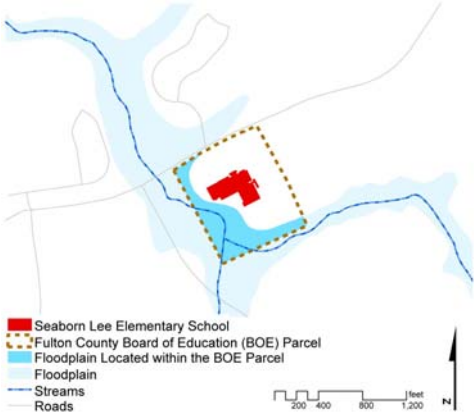


Figure 3.15: Continued









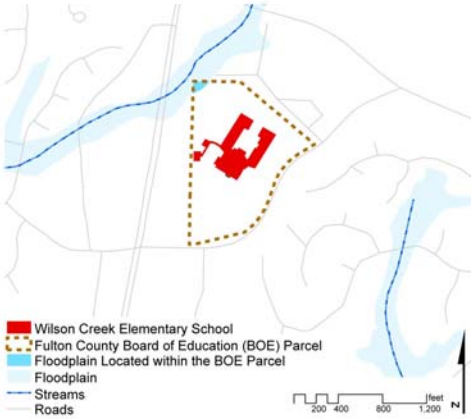


Figure 3.15: Continued

As can be seen from the previous diagrams, in the case of three elementary schools, Hamilton E. Holmes, Mary M. Bethune, and Seaborn Lee, the floodplain and stream create a truly major barrier to mobility, as they surround these schools on two sides.

3.2.3.3 Interstate Highways

A number of Fulton County elementary schools have specific undesirable linear land uses located in close proximity, or in some cases directly adjacent to the school. Four elementary schools are located along an interstate highway, which are shown in Figure 3.16. This would seem to be an extremely poor choice for a number of reasons, including the adverse effects of young children breathing exhaust from this type of major, high volume automotive traffic, another questionable aspect would be the constant drone of Interstate traffic as noise pollution. In terms of accessibility, an interstate highway creates a major barrier. Obviously students cannot cross an interstate on foot or bicycle, and can only cross this major barrier in a limited number of locations in a car. Thus one entire boundary of the school is cut off from the surrounding community and longer travel distances are required to reach the school.

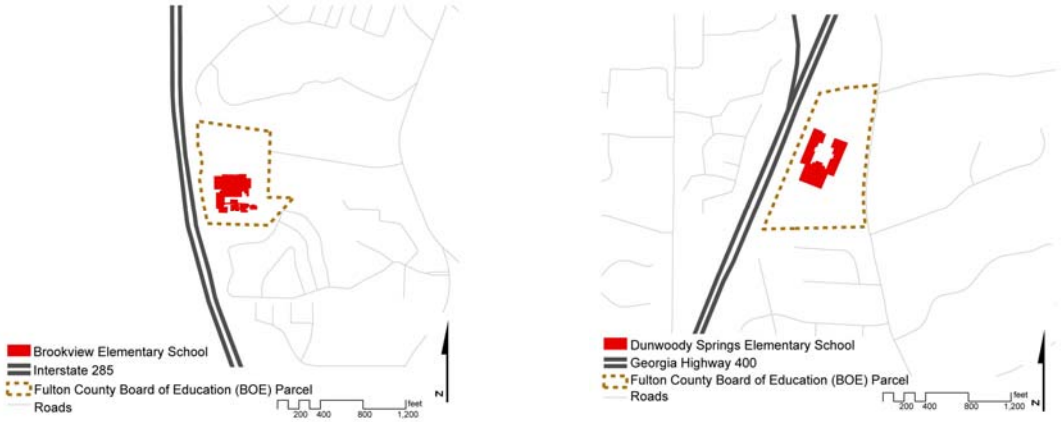


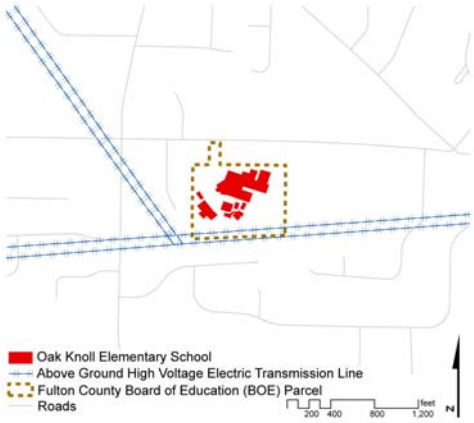
Figure 3.16: Elementary School Located along Interstate Highways

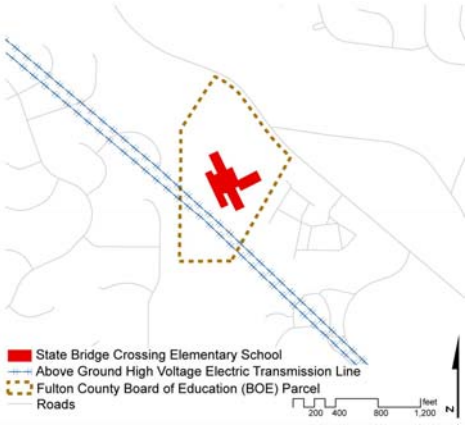
Figure 3.16: Continued

3.2.3.4 Utility Transmission Lines

Another linear barrier found in Fulton County is the existence of utility transmission lines in close proximity to elementary schools. High voltage above ground electrical transmission lines are located near or cross four schools sites, and one school is located adjacent to an underground gas transmission line and easement. These incompatible conditions somewhat limit accessibility by interrupting the connectivity of the surrounding road network to the school. The transmission lines also require land for easements, which reduces the number of households that are located along one boundary of the school. These schools are shown in Figure 3.17.

Figure 3.17: Elementary Schools Located Adjacent to Utility Transmission Lines





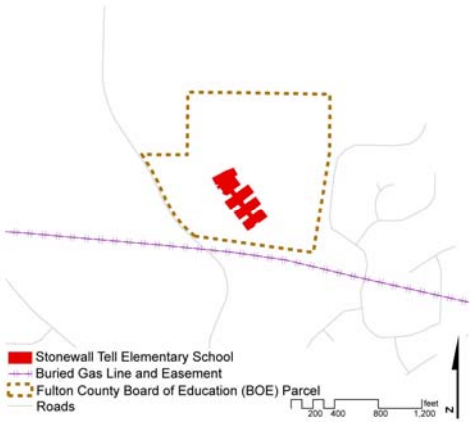


Figure 3.17: Continued

3.2.4 Distance

All these previously described conditions contribute to students living far from their school, and having to travel long distances to reach their school. Consequently, only 12% of students in Fulton County live within a quarter mile radius of their school. Table 3.8 shows the number of schools in each range of percentage that could walk to school.

Table 3.8: Percentage of Children Able to Walk to School

Number of Schools	Percentage of Children Living in Single-Family Households who could Potentially Walk to School*
1	53%
2	30-35%
2	25-30%
5	20-25%
8	15-20%
10	10-15%
14	5-10%
11	0-5%

* Assuming one child per household structure.

The 53% outlier in the data is due to a mobile home park located adjacent to Parklane Elementary School. For a complete list of the raw data compiled to generate these percentages, Table C.2 on page 153 in Appendix C.

3.3 Site Analysis

The majority of elementary schools in Fulton County are inaccessible and lack a connection between the school and the surrounding neighborhood. This problem has been illustrated in the previous chapters as it relates to attendance district boundaries and conditions surrounding the school parcel. There are also design and building orientation decisions made at the scale of the individual school site that further disassociate the school from the surrounding community.

3.3.1 School Size

The Georgia Department of Education (DOE) Facilities Selection guidelines specify minimum acreage requirements for school sites. As enrollment numbers grow, these acreage amounts increase. These large sites discourage a relationship between the school building and the community, as the building is surrounded by the land of the excessively large parcel. These large sites hinder accessibility by any means other than an automobile, and were designed with this mode of transportation access only. In 50 out of 53 schools, the school parcel even exceeds the DOE site requirements. Nine schools are 20 or more acres above the minimum. Table 3.9 shows the number and ranges of schools that exceed or do not meet the DOE site minimum acreage. A full list of the total parcel size for all the elementary school sites, and the minimum acreage allowed by the guidelines can be found in Table C.3 on page 155 in Appendix C. The FTE count has been simplified to reflect only existing enrollment numbers.

Table 3.9: School Parcel Acreage

School Parcel Size	Number of School Parcels
< the minimum acreage	3
< 1 acre over the minimum	3
1-3 acres over the minimum	6
3-6 acres over the minimum	7
6-9 acres over the minimum	6
9-12 acres over the minimum	10
12-15 acres over the minimum	6
15-18 acres over the minimum	2
18-21 acres over the minimum	2
21-24 acres over the minimum	2
24-27 acres over the minimum	2
27-30 acres over the minimum	2
> 38 acres over the minimum	2

As illustrated in Table 3.9, eight schools are in excess of 21 acres above the minimum acreage specified by the DOE guidelines. Two schools are more than 38 acres above the minimum acreage.

3.3.2 School Visibility

A highly visible school increases the connection between the school and the community. In the study area, 16 schools were not visible from the street. This was due to a number of site conditions including: schools which are located at a much lower elevation than adjacent parcels and roads, fences and gates separating the school from the community, and vegetation that appears to deliberately obscure the school from view. It is also due to the school being set back from the road. Another factor which creates a separation between the school and neighborhood is the existence of large surface parking lots situated between the school and the road, and long driveway length. In many instances, the school building and entrance are orientated as to have no relationship with the street.

3.3.2.1 Surface Parking

The location of a large parking lot between the elementary school entrance and the path that a student would take to access the school creates an inaccessible and hostile environment for pedestrians. In most instances, this is assumed to be the road on which the school is located. This site design privileges the automobile over the pedestrian. Parking lots also set the school back from the road, reduce visibility of the school, and separate the school from the community. Among the schools studies, 49 out of 53 schools have surface parking lots located between the school entrance and the road. Surface parking area ranges from 0.24 acres to 1.47 acres. The average amount of surface parking is 0.8 acres. Fourteen schools have over an acre of surface parking. The following table 3.9 shows the number of schools in each range of surface parking lot acreage amounts. Refer to Table C.4 on page 157 in Appendix C for a complete list of parking lot acreage located at every school.

Table 3.10 Parking Lot Acreage for Elementary Schools

School Parking Lot Size	Number of Schools
les than .25 acre	1
.25 acres to .5 acres	5
.5 acres to .75 acres	19
.75 acres to 1 acres	14
1 acres to 1.25 acres	11
1.25 acres to 1.5 acres	3

The six schools with the largest acreage of surface parking are shown in Figure 3.18. These diagrams also give a sense of the relationship between the parking lot, school orientation, and potential access points for pedestrians. These large parking lots are also all located between the school and the road on which the school is located. The six elementary schools with the least amount of surface parking are shown in Figure

3.19, to give an example of the relationship between the school entrance and potential access points in this condition. Although all of these schools also have parking areas located between the school and road, the smaller parking lots create less of a visual and physical barrier. Four schools do not have parking lots located between the school and the road. These schools are shown in Figure 3.20.

Figure 3.18: Elementary Schools with the Greatest Amount of Parking Lot Acreage

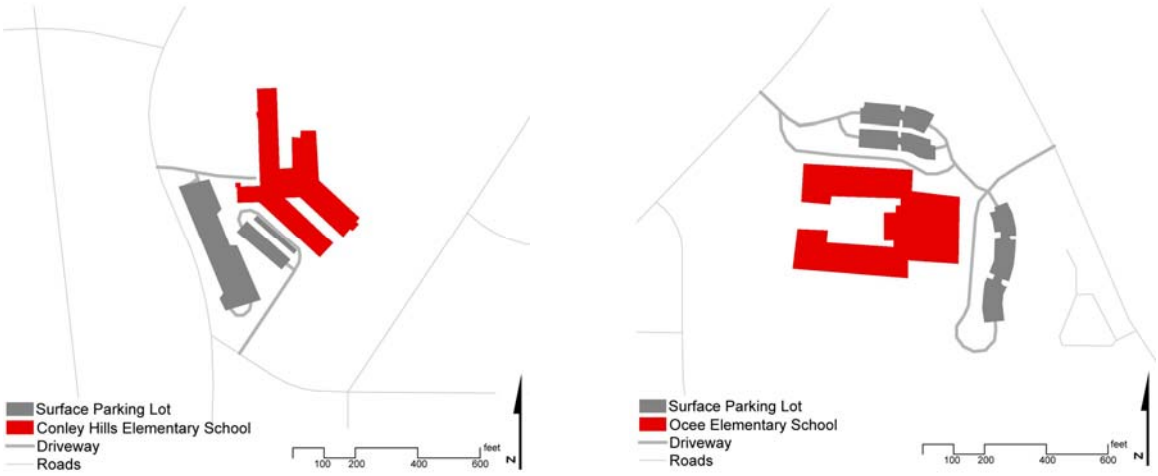


Figure 3.18: Continued

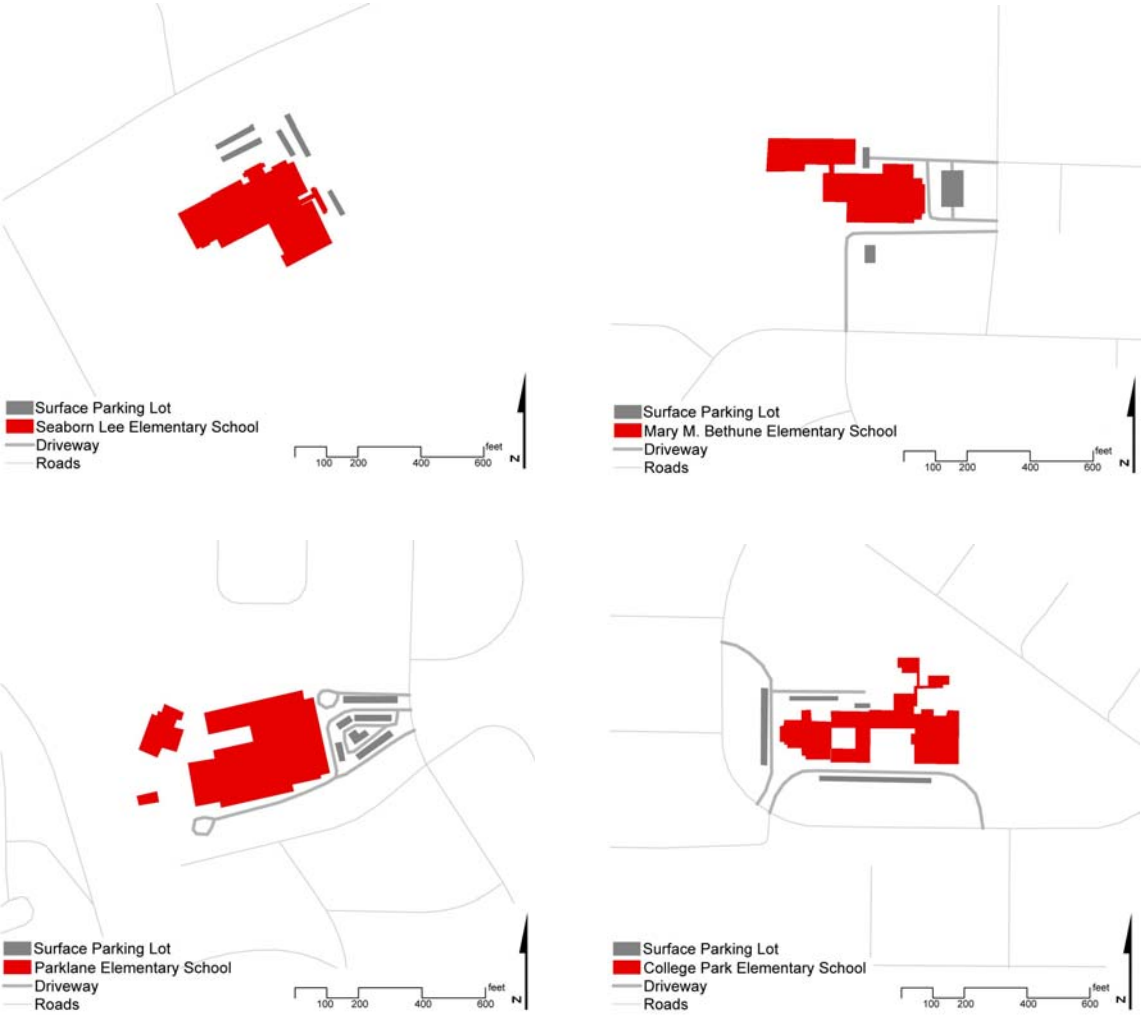


Figure 3.19: Elementary Schools with the Least Amount of Parking Lot Acreage

Figure 3.19: Continued

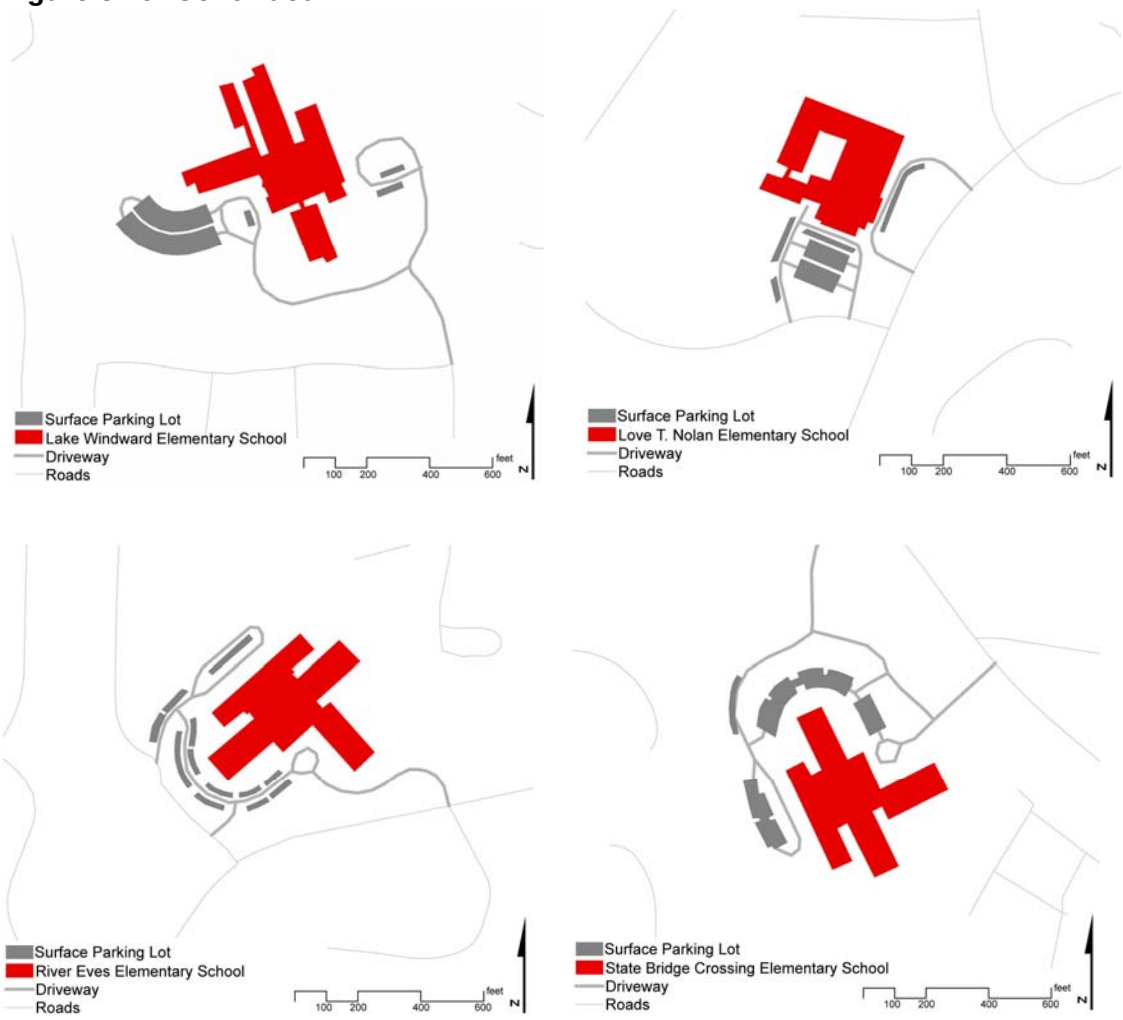


Figure 3.20: Elementary Schools without Parking Lots as Entrance

3.3.2.2 Driveway Length

Many of the elementary schools are separated from the surrounding community by the existence of an excessively long, often winding driveway. This condition is undesirable because it results in usually only one access point into the school, which is difficult and inaccessible for pedestrians. Schools in the study area have driveways ranging in length from 170 feet to 2,100 feet. In 28 of the 53 schools the driveway length is over 500 feet. The following Table 3.11 summarizes the relationships between the schools and driveway length. These distances are calculated from the sidewalk to the entrance of the school, not the entire driveway loop, to better assess what a pedestrian would encounter when approaching the school. A list of all the schools and driveway lengths can be found in Table C.5 on page 158 in Appendix C.

Table 3.11 School Driveway Length

Driveway Length	Number of Schools
less than 200 ft	3
200 ft - 400 ft	15
400 ft - 600 ft	12
600 ft - 800 ft	13
800 ft - 1000 ft	2
1000 ft - 1200 ft	1
1200 ft - 1400 ft	1
1400 ft - 1600 ft	2
1600 ft - 1800 ft	2
1800 ft - 2000 ft	0
2000 ft - 2200 ft	2

Figure 3.20 illustrates the six schools with the longest driveway distance from the sidewalk to the entrance of the school. These schools often also have excessive setbacks. In these cases, even if the school is visible from surrounding vantage points, these long driveway distances to the entrance of the school result in inaccessibility. These long driveways are built with the assumption that children will reach the school by

automobile and not by active modes of transportation. For comparison, the six schools with the shortest driveways are also shown in Figure 3.21.

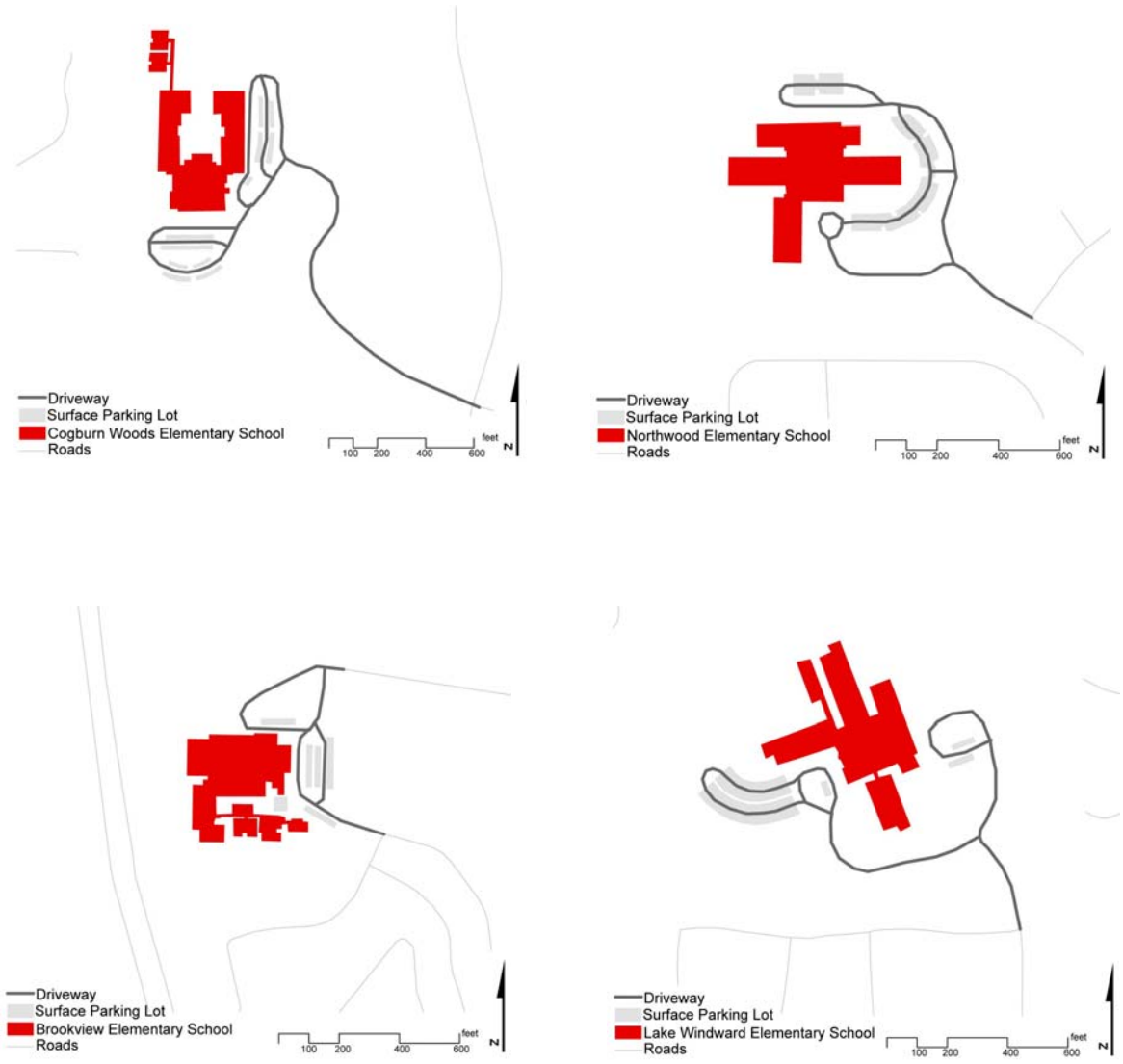


Figure 3.21: Elementary Schools with the Longest Driveway Length

Figure 3.21: Continued

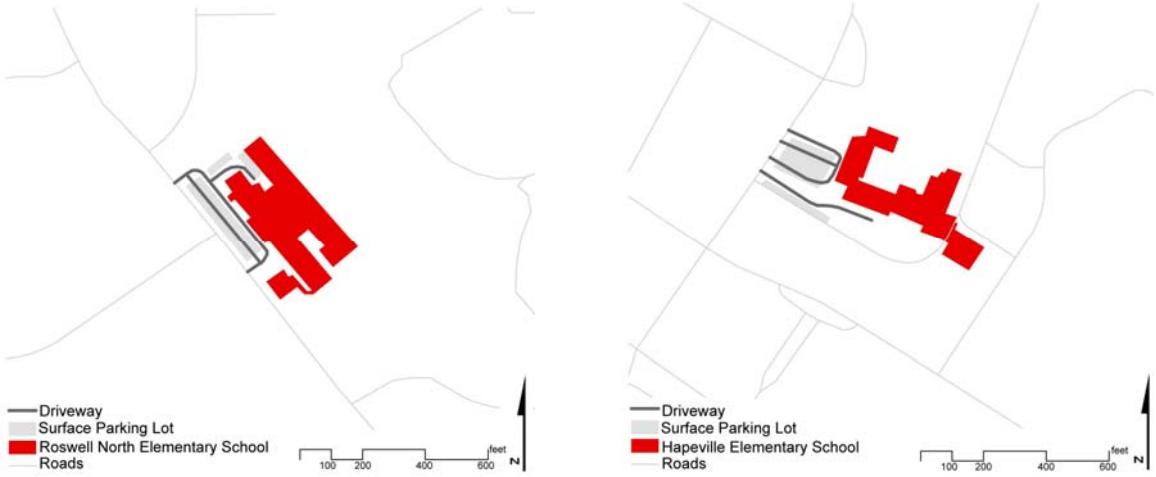


Figure 3.22: Elementary Schools with the Shortest Driveway Length

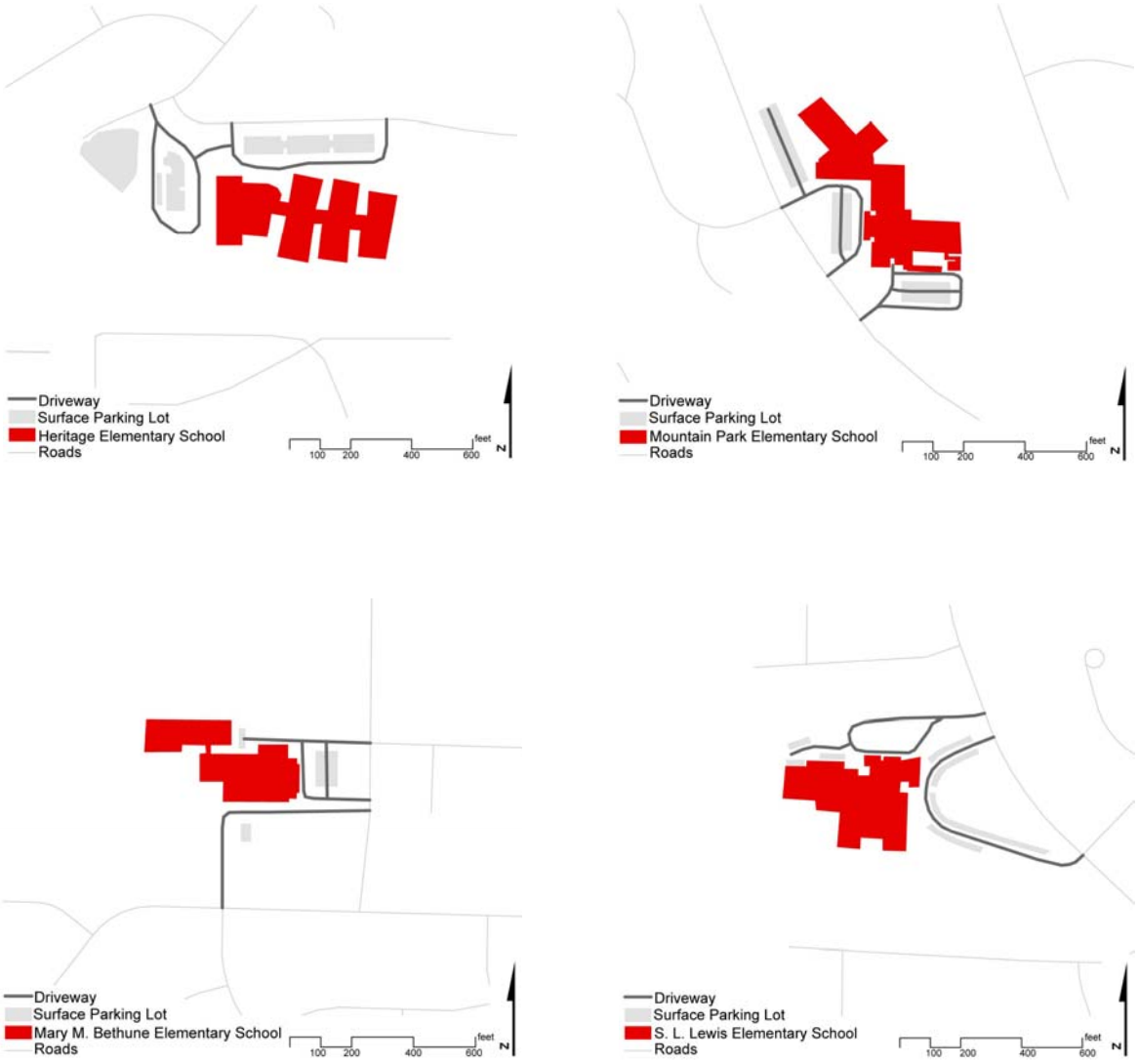


Figure 3.22: Continued

3.3.2.3 School orientation

Thirty-nine of schools in the study area are oriented as to have no relationship with the street. The relationship between the school and the street was clearly not considered in the design of these schools. This lack of a relationship with the street reduces the visibility of the school from the street and results in the school not having a connection with the community.

CHAPTER 4

DESIGN AND POLICY RECOMMENDATIONS

An urban design policy focused on creating community connections should guide elementary school site selection decisions. All site selection and design decisions should reflect the contexts of the communities that they serve. These recommendations are focused on the desire to improve both the accessibility of the school and its connectedness to the nearby neighborhoods. Policy decisions should be made to retrofit existing schools to achieve these goals, and new school sites should be chosen that reflect them. Greater school accessibility and community connectedness can be achieved by implementing strategies at all three of the scales discussed in this paper. These changes can only be implemented if the document used by the Georgia Department of Education (DOE), '*A Guide to School Site Selection,'* is revised. The needed revisions are described in this chapter as they relate to each scale. The exact language of the revisions and additional site analysis to be performed is shown in Appendix A. Before a municipality is approved for a new school site, this additional analysis should be required by the DOE. Accessibility of the school from multiple directions can shorten the length of trips that students must make to reach their school, which allows additional modes of transportation to become a real possibility.

4.1 Attendance District

The best fit for the school within the overall patterns of land use and development must be considered to correct the problem of school inaccessibility at the attendance district scale. Decisions must be made based on an analysis of the household density, household location, and travel patterns within the overall district. If schools are to be accessible, then households and schools must be located in close proximity to each

other. The guidelines do not include any requirement for an analysis of land use or existing residential development patterns to be performed at the scale of the attendance district. This is an essential first step to ensure that the school is integrated into the existing community.

For existing schools, the following strategies are suggested. Residential neighborhood boundaries and blocks should be delineated within each attendance district. Attendance districts should be redrawn if needed, using these boundaries as a guide. Clearly, schools should not be located adjacent to an attendance district boundary. The location of existing schools should be given consideration in zoning and land use decisions, and incompatible uses should not be permitted adjacent to schools. In districts where schools are located on the edge of a zone of incompatible, usually non-residential land use, future decisions should be made with the goal of gradually converting these zones to residential. The goal of accessibility can only be achieved if the school is centrally located within the residential zone of the attendance district. Commercial uses located next to schools reduce the number of households that can be located in close proximity to schools. These uses also require access to a major transportation route, which is incompatible with elementary schools, and is yet another reason why the adjacency of these uses renders walking to school impossible. District boundaries should be drawn with some regard for the location of major barriers, such as Interstate Highways, and use these existing divides as the district boundary. This will increase mobility, as these barriers will not have to be crossed by students to reach their school.

Although new schools in Fulton County are often built in rural areas that are simultaneously being newly developed, future schools should be guided by the same goals, with a clear awareness of any existing neighborhoods, and a plan to construct new neighborhoods with a relationship to the school. To achieve this goal, a land use

analysis must be performed for a proposed school site. Refer to page 84 of Appendix A for a checklist of revised guidelines. Only sites located in the center of existing or planned residential areas should be considered for schools. To be truly successful, the school must be conceived of as a point of connection between adjacent neighborhoods. A prominent school provides a landmark and an anchor; school connection is necessary to give the school a presence in the community.

4.2 Quarter Mile Radius

The edge between the school and the immediate surroundings of the school must be made more accessible. Multiple barriers to accessibility can be found at this scale. They include: floodplains, interstate highways, attendance district boundary edges, major utility lines, and other schools located adjacent to the elementary school. A school site should not be considered that is adjacent to any of these conditions; nor should major roads, utility lines, or other schools be located next to existing elementary schools. Non-residential land uses should not be located within a quarter mile radius of an elementary school, and sites which are surrounded by non-residential land uses should not be considered for future schools.

Allowing for higher densities of residential households located in close proximity to the elementary school promotes highly accessible schools. In addition, school parcel boundaries should be permeable so that the school has multiple points of entry from all directions. Cul-de-sac developments tend to increase non-permeable school parcel edges, as the designers of these developments clearly view the school as a barrier adjacent to the subdivision, as opposed to viewing the school as an opportunity for connectivity and as a neighborhood asset. This is evident in the many examples of a cul-de-sacs ending one parcel from the school, with no connection to the school whatsoever. A more regular orthogonal grid system of blocks is a framework that lends

itself to more accessibility and more connections. However, if new subdivisions are constructed adjacent to the school that utilize an irregular cul-de-sac type of block structure, then the development must include provisions for access easements to the school between parcels. These easements should be required as part of the preliminary subdivision layout and approval process. Pathways should be designed to give the shortest and most convenient route to pedestrians to reach the school from these developments.

Decisions to locate school buildings of different levels adjacent to each other results in limited accessibility, and less household density close to any of the schools, which in turn dictates that the most feasible and the expected mode of navigation around and through these large sites is by automobile. Schools located on consolidated mega-sites seem not to be in the best interest of the students or the surrounding community that the school is intended to serve.

If a public park or other potentially supportive facilities are located adjacent to the school, opportunities for sharing the park fields or other assets with the elementary school should be explored, instead of the school maintaining a separate high acreage recreational area or otherwise providing space that may be available nearby. This could potentially be a cost saving measure for the school and the park, and a higher density of households could be located in close proximity to the school on the new land that would be available for residential household development. Refer to page 92 of Appendix A for a checklist of revised guidelines relevant to this issue.

4.3 Site

The recommendation of a preference for large acreage sites for elementary schools is problematic for a number of reasons. Larger than necessary sites at the edges instead of in the middle of residential neighborhoods reinforces schools' disconnectedness from the neighborhoods they are supposed to serve, echoing the

uniform, low density development typical of suburban areas. The school buildings in the study area usually consist of a one story sprawling structures as a result of having no site constraints. Many schools have large surface parking lots, and most have a parking lot as the defining entry point to the school. This type of site design encourages schools which have little or no relationship with the street or the surrounding community. As can be noted through the illustrations in this paper, many elementary schools in Fulton County have essentially the same building footprint and size. This reflects the lack of consideration given to the unique conditions located at each individual school site, a shortcoming of school siting and design at all scales.

The following design and policy recommendations apply to both existing and new schools. For both types, the availability of sidewalk should be assessed. Within a quarter mile radius of the school continuous and connected sidewalks and bicycle lanes on both sides of the streets should be constructed if they do not exist, and crosswalks should be located at all intersections. All routes for accessibility to the school site should be mapped. The school should be located close to the street, with wide and well connected sidewalks, and have a welcoming street presence. The entrance to the school should be prominent and easily distinguishable. School driveway length and setbacks from the street should be minimized. Surface parking should be located in an area that does not impede accessibility to the school, and it should never be located between the school entrance and a major pedestrian access route.

Schools should never be constructed on a site that is not served by public sewer. If the infrastructure necessary to serve the school is not in place on a potential site, a clear and realistic strategy for funding the development of it should be determined prior to its consideration for a school. Infrastructure planning and budgeting can support site selection approaches that reinforce the importance of locating elementary schools centrally in their neighborhoods.

4.4 Implementation

To implement these findings for existing elementary schools, an assessment was performed to measure each school's accessibility. Each school scored one point for each condition found at the school which impedes accessibility and connectedness. The scores were summed and ranked, with a lower score representing a more accessible and better connected school. The results of the ranking can be seen in Table 4.1. The table provides a guide that could be useful for implementing improvements over time, revealing which kinds of problems exist at which schools.

Table 4.1: Accessibility Ranking of Schools

Elementary School Name	>1 acre of surface parking?	<100 SF HH within .25 mile radius	Non-SF residential land use adjacent to school	< 3 access points to school	School parcel is > 20 acres	Driveway length >1000'	School parcel located in floodplain	Elementary School is adjacent to another school	Public park is located next to school	School located next to interstate highway	School located next to major utility line	Totals
S. L. Lewis												0
Mimosa												0
Alpharetta				1								1
Barnwell					1							1
High Point				1								1
Esther Jackson				1								1
Medlock Bridge	1											1
Mount Olive		1										1
Love T. Nolan									1			1
Spalding Drive				1								1
College Park		1							1			2
Findley Oaks					1	1						2
Seaborn Lee		1					1					2
Parklane			1						1			2
A. Philip Randolph		1							1			2
River Eves					1		1					2
Evoline C. West		1			1							2
Abbotts Hill	1			1	1							3

Table 4.1: Accessibility Ranking of Schools

Elementary School Name	>1 acre of surface parking?	<100 SF HH within .25 mile radius	Non-SF residential land use adjacent to school	< 3 access points to school	School parcel is > 20 acres	Driveway length >1000'	School parcel located in floodplain	Elementary School is adjacent to another school	Public park is located next to school	School located next to interstate highway	School located next to major utility line	Totals
Mary M. Bethune							1	1	1			3
Conley Hills	1			1							1	3
Crabapple Crossing		1		1				1				3
C. H. Gullatt		1		1			1					3
Hapeville		1					1		1			3
Heritage	1	1	1									3
Manning Oaks		1	1		1							3
Oak Knoll				1			1				1	3
Ocee	1		1	1								3
Palmetto	1	1			1							3
Roswell North		1					1		1			3
Shakerag		1			1			1				3
Stonewall Tell		1			1						1	3
Campbell		1	1	1	1							4
Dolvin	1	1		1	1							4
Heards Ferry		1		1				1		1		4
Hamilton E. Holmes	1			1	1		1					4
Lake Windward				1	1	1			1			4

Table 4.1: Accessibility Ranking of Schools

Elementary School Name	>1 acre of surface parking?	<100 SF HH within .25 mile radius	Non-SF residential land use adjacent to school	< 3 access points to school	School parcel is > 20 acres	Driveway length >1000'	School parcel located in floodplain	Elementary School is adjacent to another school	Public park is located next to school	School located next to interstate highway	School located next to major utility line	Totals
Mountain Park		1			1		1		1			4
Northwood		1		1	1	1						4
Oakley		1		1	1	1						4
Summit Hill	1	1		1	1							4
Sweet Apple	1	1			1				1			4
Harriet Tubman		1		1	1		1					4
Woodland		1		1		1				1		4
Brookview		1		1		1				1	1	5
Dunwoody Springs		1		1	1		1			1		5
Hembree Springs		1			1		1	1	1			5
Hillside		1	1	1	1			1				5
Liberty Point	1	1		1	1		1					5
State Bridge Crossing	1	1		1	1						1	5
Cogburn Woods		1		1	1	1	1	1				6
New Prospect		1	1	1	1		1		1			6
Wilson Creek	1	1	1	1	1		1					6

The following example illustrates how the policies and recommendations described in this chapter might be translated into design moves to increase the accessibility and connectedness of existing schools. Using the ranking criteria described throughout the paper, that is giving one point for each negative condition found at the school, Creek View Elementary School scored the highest, i.e. worst, in the ranking system. The series of diagrams in Figures 4.1 - 4.3 show how this school could be retrofitted to increase accessibility and connectedness.

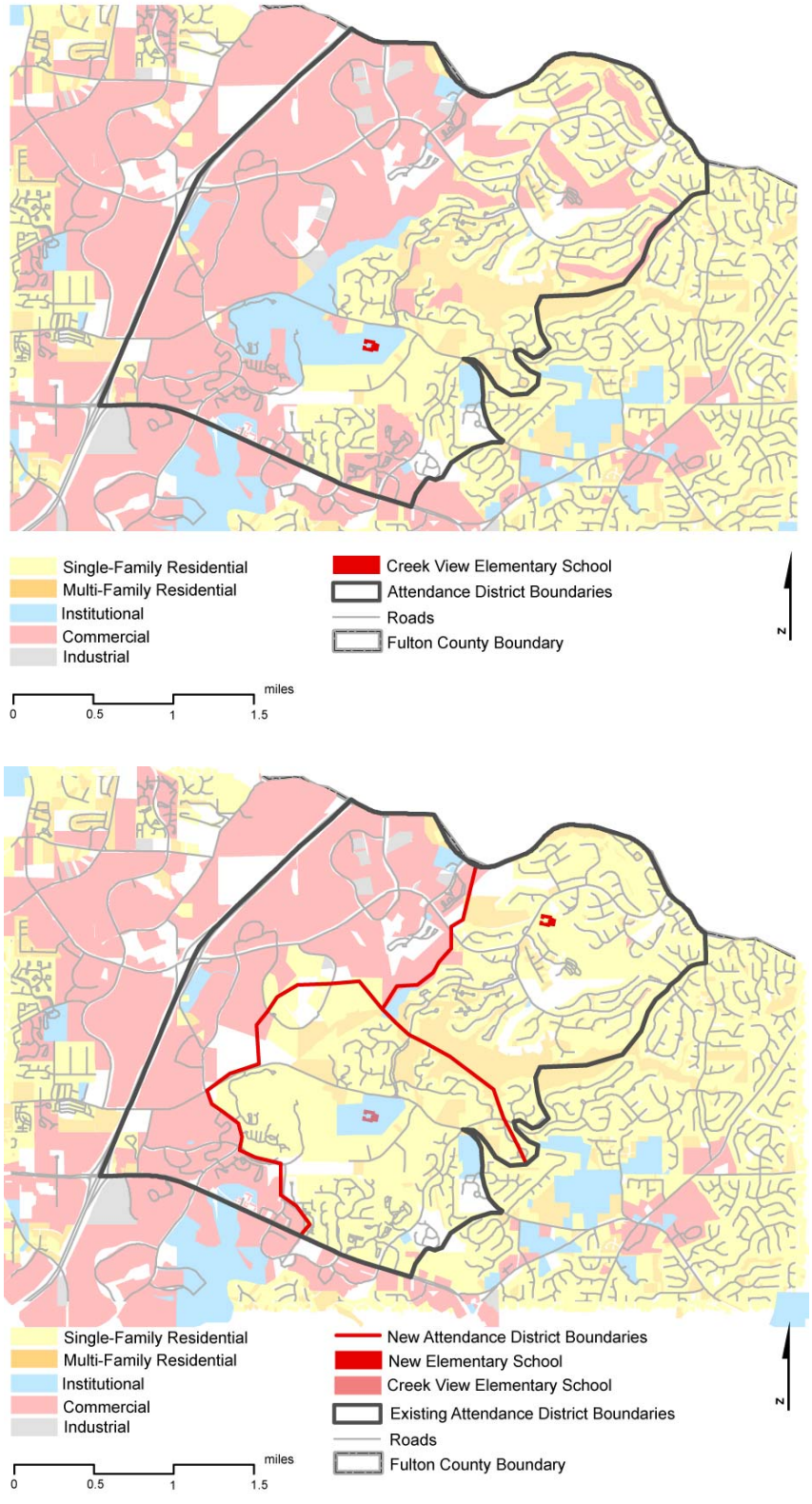
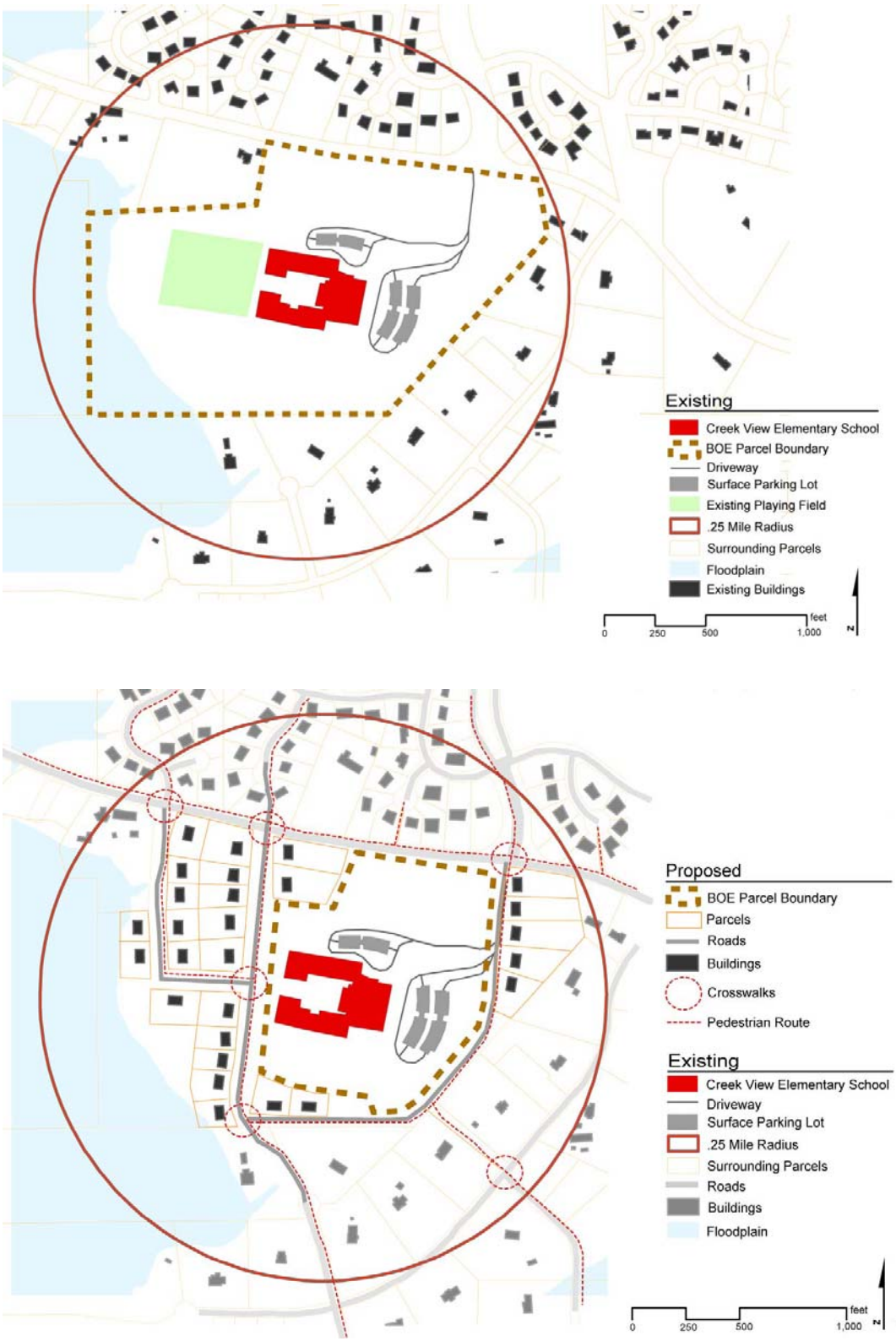


Figure 4.1: Attendance District Scale: Existing Conditions and Proposed Retro-fit for Creek View Elementary School

The following changes are proposed at the scale of the attendance district:

- Reduce geographic size of attendance district boundaries by splitting the district into two smaller ones.
- Change land use surrounding school to residential, considering the possibility of higher residential densities nearby.
- Build an additional school which is centrally located in the residential area in the new district.



4.2: Quarter Mile Scale: Existing Conditions and Proposed Retro-fit for Creek View Elementary School

The following changes are proposed at the quarter mile scale:

- Reduce the size of the school parcel.
- Additional roads are proposed in an orthogonal grid block pattern, to add new street frontage on the east, west, and southern school parcel boundaries.
- Additional orthogonal parcels are suggested.
- Additional households may be located adjacent to and around the school to increase density.
- Sidewalks and pedestrian easements are proposed.
- Crosswalks are proposed.

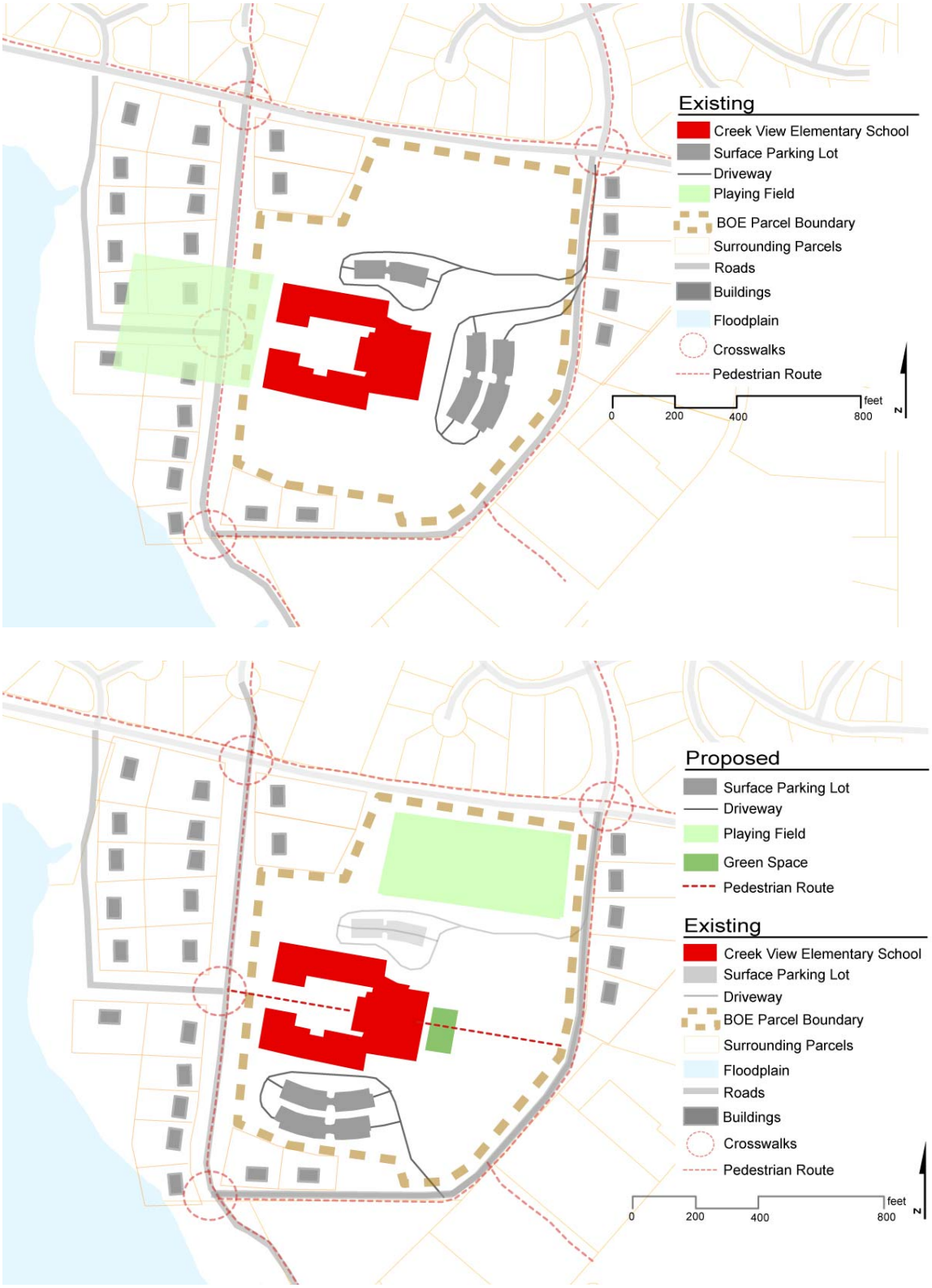


Figure 4.3: Site Scale: Existing Conditions and Proposed Retro-fit for Creek View Elementary School

The following changes are proposed at the site scale:

- Move the playing field from the back of the school to the front, where it becomes a shared community facility.
- Move the parking lot from its original location in front of the school entrance to a hidden location south of the school building.
- The entry to the school is on an axial line with the newly constructed road.
- A green space and major pedestrian congregation area is suggested in front of the main school entrance.

The above analysis suggests one way to redress the deficiencies at this particular school. Similar design moves could be implemented at many of the other sites. The ideas are clearly only conceptual, and require considerable further study to result in actionable retrofits. Nonetheless, the implementation of the findings of the study is within the realm of feasibility over time.

CHAPTER 5

CONCLUSION

This study was conducted to consider current school site selection policy guidelines as they affect school accessibility and integration into the life of the communities they serve. The study found that by and large children in Fulton County are unable to get to school on foot or by cycling and instead must make the trip by car or school bus. It further found that schools are not for the most part located as integral parts of their communities, rather located at the edges of residential neighborhoods. To improve access and access choices and to support community quality of life, when a site is selected for a new school, the adjacent land uses and connections need far more consideration. The problems created by this lack of consideration for the larger framework and the interconnections of systems into which a school building is placed create both social and physical disconnects.

Most students in Fulton County must travel considerable distances from their neighborhoods to reach their school. To improve accessibility, a few simple strategies can be implemented to increase the number of students able to walk to school, or otherwise have a shorter trip. The three scales discussed in this thesis were utilized as a way to investigate the existing conditions, the analysis of which led to these conclusions. Students should be able to live closer to their school. If more students live close to the elementary school, then more can walk or cycle to school. Site selection policies should incorporate urban design and planning goals to reduce or eliminate barriers to school accessibility. The Georgia Department of Education should include accessibility as a primary objective of the site selection process. Existing schools should be retrofitted to increase the opportunity for multiple modes of accessibility by designing connections to schools through private parcels along school boundaries, and land use

decisions surrounding these schools should be made to increase the numbers of household located close to the school. New neighborhood construction should include pedestrian easements to connect to schools, and only residential land use should be permitted in close proximity to schools.

In the state of Georgia, between 35%-40% of children age 10 to 17 are categorized as overweight or obese. The state of Georgia also has the third highest rate of overweight and obese children aged 10 to 17.[12] Any daily increase in physical activity can aid in reversing these alarming numbers. Thus, providing a viable choice to walk or cycle to school is good for children and, along with many other factors, may increase a child's capacity to learn. Therefore, if the health and success of the child is a fundamental purpose in their education, then allowing for the possibility of active transportation to school should be a high priority for the Georgia Department of Education and for Fulton County.

Integrating the school better into community life, while not as direct a purpose, supports more neighborhood and family involvement in the education of their children and it prospectively contributes the presence and space of the school to meet and enrich community. Thus placing schools in a way that makes them a central feature of neighborhoods both improves their connectivity and foregrounds their presence as community anchor. Both the accessibility goal and the centrality goal may call upon policy makers to reconsider site size guidelines. Overly large sites may discourage both goals, while the purpose of site size criteria, mainly play space and parking, can be better served by joint use of existing or planned community open space.

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[12] Trust for America's Health, 2009.

APPENDIX A:

GEORGIA DEPARTMENT OF EDUCATION GUIDE TO SITE SELECTION - RECOMMENDED REVISIONS

A GUIDE TO
SCHOOL SITE SELECTION

RECOMMENDED REVISIONS

GEORGIA DEPARTMENT OF EDUCATION
FACILITIES SERVICES UNIT
August, 2009

A GUIDE TO SCHOOL SITE SELECTION

A Good School Site is Important

A good, well-developed site and a well-equipped, functionally designed school is a basic physical tool for a quality education. Without one or the other, the educational program may suffer. Current school programs include many activities that must be carried on outside the walls of the school. Well-planned and properly developed outdoor areas are essential to support outdoor activities. The site should be highly visible and connected to the surrounding neighborhood. The vehicular circulation on the school site should play a subordinate role to the pedestrian circulation routes connecting the school site to the neighborhood. A minimal amount of convenient parking should be provided in a location that does not impede access to the school. The site is an integral part of the successful development of a new school and a poorly or thoughtlessly selected site may inhibit the achievement of the school's objectives.

Environment is an influential factor in the lives of young children. Therefore, the school site should contribute positively to the health, safety and social aspects of a child's life at school. As a part of this goal, school sites must be selected which promote physical activity for school aged children. School sites that are chosen must have a high degree of pedestrian accessibility. The school should not be surrounded by conditions which create barriers to the school.

Choosing a good site is one of the important early steps in overall planning. Success or failure in this initial step will be reflected in every subsequent stage in the developmental process.

For these reasons, the choice of a school site requires careful study, including a through and objective evaluation and adherence to the following guidelines. Much thought should be given to the basic principles and requirements involved in good site selection, as outlined in this document.

These principles, when studied in the light of their relation to the local situation, should provide a basis for the objective selection of the best site available. Undue consideration given to the value or acquisition cost of a school site can be a false economy, and often has proven to be very expensive.

Criteria for Selection of School Sites

Size:

School sites under consideration should be the smallest acreage parcel that meets the criteria and is available.

The *maximum* acreage requirements for of the State Board of Education are:

Elementary Schools – 8 acres; elementary schools are not permitted to be located adjacent to middle schools or high schools, as the total acreage of these parcels would exceed the maximum acreage requirement.

The school site should also be chosen with the expectation that the school will function in multiple roles within the community.

Utilities:

Utilities essential to the school must be available.

Electricity and telephone services are essential to the operation of the school and must be accessible to the proposed site.

Access to public water and sewage are required for a proposed school site. The cost of installing private systems, along with the continuing maintenance costs, the limitations on household development density surrounding the school, and environmental considerations eliminate consideration of private installations.

Safety Hazards:

The school site should be free of conditions and installations which endanger the life, safety and health of children. If one or more of the potential hazards identified on page 5 of this document exists on or near a proposed school site, other sites should be evaluated where these potential hazards do not exist. Any proposed school site adjacent to an airport, or in the final approach or departure pattern of aircraft should not be considered.

School sites should be located away from lakes, streams, or bodies of water. These adjacent site conditions create barriers to school accessibility and reduce the density of households located near the school. Sites adjacent to heavily traveled streets and highways should not be considered. This includes sites that are located adjacent to Interstate Highways, State and County routes, and any other limited access or divided roads. The school site should also not be located on any of these types of major roads.

Also, school sites in locations subject to industrial pollution may present risks to students and faculty with respiratory problems and should not be considered.

Environmental Factors:

The school site should possess physically desirable characteristics and be located so surrounding areas reflect characteristics conducive to the development of attitudes and responses in children considered to be socially, culturally and educationally desirable.

The selection of a school site in or adjacent to an area zoned for commercial or industrial development is not permitted. The school location should be insulated from business and industrial development. The land use within a .25 mile radius of the school must be residential. The routes to and from the school site should not expose children to hazardous environmental materials or safety hazards while walking or cycling to the school site.

The location of a school site should be acceptable to the school patronage community from the standpoint of general environmental surroundings and pedestrian and vehicular accessibility.

Geographical and Related Factors:

The school site should provide multiple points of convenient accessibility, be supportive of multiple modes of transportation to the school, be accessible to services both needed by the school from the community and provided to the community by the school. The school must also be appropriately located with respect to other schools and the population to be served.

No portion of the school site is permitted to be located in the floodplain. It is also not permitted for floodplain area to be located within a .25 mile radius of the school site. All school site approvals must be accompanied by a letter of assurance that these conditions have been met, and that the site is not in the Coastal High Hazard Area. This letter of assurance must be from the Floodplain Management Coordinator of the Georgia Department of Natural Resources.

To obtain the letter of assurance, write the Floodplain Management Coordinator, Georgia Department of Natural Resources and enclose:

1. County or City Road Map with the location of the site clearly marked and
2. Site Plan with the location of the location of existing or proposed structures identified.

The letter of request should include a brief description of the school location with directions from a given point, such as a town or city, and the names of roads etc…

Site Development:

The physical characteristics of the school site should be such that the cost of grading, drainage and development will be relatively low. To reduce grading costs and to increase the visibility of the school, the school site must be located at the same elevation as the surrounding roads and parcels.

The evaluation of a site as it relates to physical development is a technical task, requiring the knowledge and experience of a qualified professional. The investment required to obtain a professional evaluation for physical development may result in considerable future savings.

Criteria for Selection:

A Phase I-Environmental Site Assessment will be required for each school site. The Phase I-Environmental Site Assessment shall follow the methodology of the ASTM Practice E 1527-97. A Phase I-Environmental Site Assessment Report must be attached to each completed "Preliminary School Site Evaluation and School Site Approval Form" submitted to the Department of Education for review and approval.

A school site cannot be considered if it is located within a .25 mile radius of any of the following hazards:

(1) Electrical transmission lines rated at 115KV or higher;
(2) Oil or petroleum products transmission lines and storage facilities
(3) Hazardous chemical pipelines;
(4) Natural gas transmission and distribution lines larger than ten inches in diameter with a pressure of 200 psi or more;
(5) Propane storage facilities;
(6) Railroads;
(7) Major highways;
(8) Airport approach or departure paths;
(9) Industrial/manufacturing facilities:
(10) Lakes, rivers, dams, reservoirs, or other bodies of water;
(11) Potential flooding because the property is located in the floodplain or dam breach zone;
(12) Nuclear waste storage facilities;
(13) Munitions or explosives storage or manufacturing

If any one or more of the previously listed hazards is located on or near (up to a three mile radius) a proposed school site, a Risk/Hazard Analysis shall be required in addition to the Phase I – Environmental Site Assessment.

A Risk/Hazard Analysis must be completed by a registered, professional engineer licensed to do business in the State of Georgia and shall include the following information at a minimum:

(1) Identification of each hazard;

(2) An evaluation of each hazard;
(3) Options for mitigating each identified hazard (if appropriate)
(4) A statement from the engineer based on his or her professional judgement and the finding of the Risk/Hazard Analysis regarding the suitability of the site for a school.

The Department of Education reserves the right to request information in addition to that provided in the Phase I-Environmental Site Assessment and/or the Risk/Hazard Analysis. Additional information may be needed prior to reaching a decision regarding the appropriateness of a proposed site if any of the above named hazards exist on or up to the area located within a three-mile radius of the proposed school site.

PRELIMINARY SCHOOL SITE EVALUATION AND SCHOOL SITE APPROVAL FORM

Sections I through VI of this form are design for two purposes:

(1) For use by local school systems when considering property for school sites and requesting approval of a proposed site.
(2) To summarize information regarding this site for use by the Site Approval Committee

Section VII is to be used by the School Site Approval Committee for official approval of a school site.

Elementary Schools Only:

I. SCHOOL SYSTEM IDENTIFICATION AND CONTACT PERSON

School System: _____	Name of Superintendent: Person to Contact (designee):
Mailing Address:	Phone Number:_____ FAX Number: E-mail Address:

II. LOCATION OF PROPOSED SITE

Address of Proposed Site (if available) and/or legal definition of the property:	
Acreage in proposed Site:_____	Clear Title Obtainable?

III. NOTIFICATION OF THE DEPARTMENT OF TRANSPORTATION:

Has the Department of Transportation been notified of this site? Yes No When was the Department of Transportation notified?

IV. PROPOSED SCHOOL TO BE LOCATED ON THIS SITE

Name of Proposed School:	
Proposed Grades:	Approximate Number of Students:
Number of Instructional Units Proposed:	
Estimated date school is to be completed and occupied: Date: Comments:	

V. UTILITIES AVAILABLE ON THE PROPOSED SITE

(If utilities are not currently available on the site, please indicate when utility providers anticipate delivery of utilities to the site.)

UTILITY	Currently Available? Yes No	When Available? (Date)	OTHER RELEVANT FACTORS
(a) Electricity			
(b) Natural Gas			
(c) Telephone			
(d) Cable			
(e) Public Water			
(f) Public Sewer			

MISCELLANEOUS SITE INFORMATION

ATTENDNCE DISTRICT:

Has a land use analysis been preformed of the attendance district to determine where the primary residential areas are located? ____YES ____NO

Is the school site centrally located and in close proximity to the existing residential areas? ____YES _____NO

Is it accessible from multiple directions and multiple neighborhoods? _____YES ____NO

Attach land use map of district showing neighborhood boundaries and school site.

QUARTER MILE RADIUS:

Total number of households located with a quarter mile of the potential school site:_____

Linear feet of road frontage located along the school boundaries:_____

Are there connected shared sidewalk/bike lanes along all roads within a .25 mile radius of the school?

Are there crosswalks at all intersections located within a .25 mile radius of the school?

Attach map of site and quarter mile radius around the site. Show surrounding parcel boundaries, existing buildings, roads, sidewalks, crosswalks, and pedestrian access points.

Is the proposed site adjacent to an existing public park? _____YES _____NO
(If yes, show on map how the park and school facility will be connected.)
Has contact been made to coordinate sharing of facilities?
Date contacted: _____Contact person:_____

SITE:

Number of direct pedestrian access points to the school:

Number of vehicular access points to the school:

Total acreage of proposed surface parking lots:

Proposed school driveway length:

Is the topography of the site level with the surrounding parcels?

VI. SYSTEM REQUEST FOR SITE APPROVAL

The _____ School System request approval of the proposed school site identified on this form. An initial investigation has been conducted, a Phase I-Environmental Site Assessment has been conducted, and if required a Risk/Hazard Analysis has been completed. After considering the findings from all studies completed and evaluating the potential school sites available for this school, the _____Board of Education is submitting the required information and requesting approval of this proposed school site by an appropriately convened Site Approval Committee.

Signature of Board Chairperson (Date)

Signature of School Superintendent (Date)

ATTACHMENTS:

The following documents must be submitted to the Facilities Services Unit of the Georgia Department of Education before a Site Approval Committee can be convened to evaluate your system's request for approval of a proposed school site:

(1) Preliminary School Site Evaluation and School Site Approval Form with Sections I-VI completed;

(2) A copy of the letter of assurance from the Flood Plain Management Coordinator of the Georgia Department of Natural Resources stating that this proposed school site is not in a flood plain or Coastal High Hazard Area;

(3) A copy of the rough plat…..

(7) Land use map of district showing neighborhood boundaries and school site.

(8) Map of site and quarter mile radius surrounding the site. Show parcel boundaries, existing buildings, roads, sidewalks, crosswalks, and pedestrian access points.

(9) Map showing how the park and school facility will be connected. *(If applicable)*

Once this documentation has been received, a Site Approval Committee will be convened at the earliest possible date to evaluate your system's request for approval of the proposed school site.

The Committee is authorized to request any additional information on any criteria (section) when, in the judgment of the committee, such information is needed to complete the evaluation of the proposed school site.

APPENDIX B:

ALL FULTON COUNTY ELEMENTARY SCHOOLS

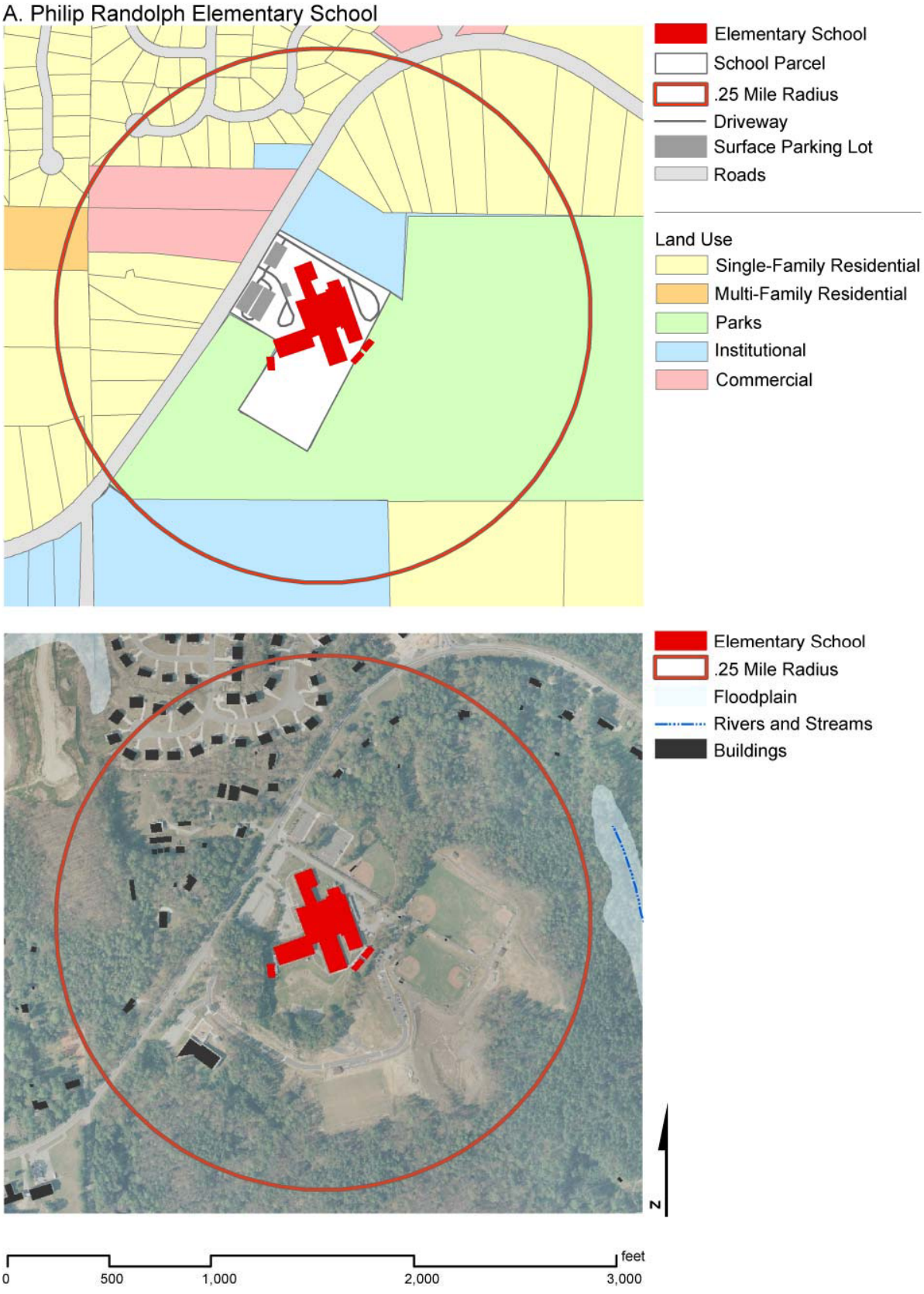
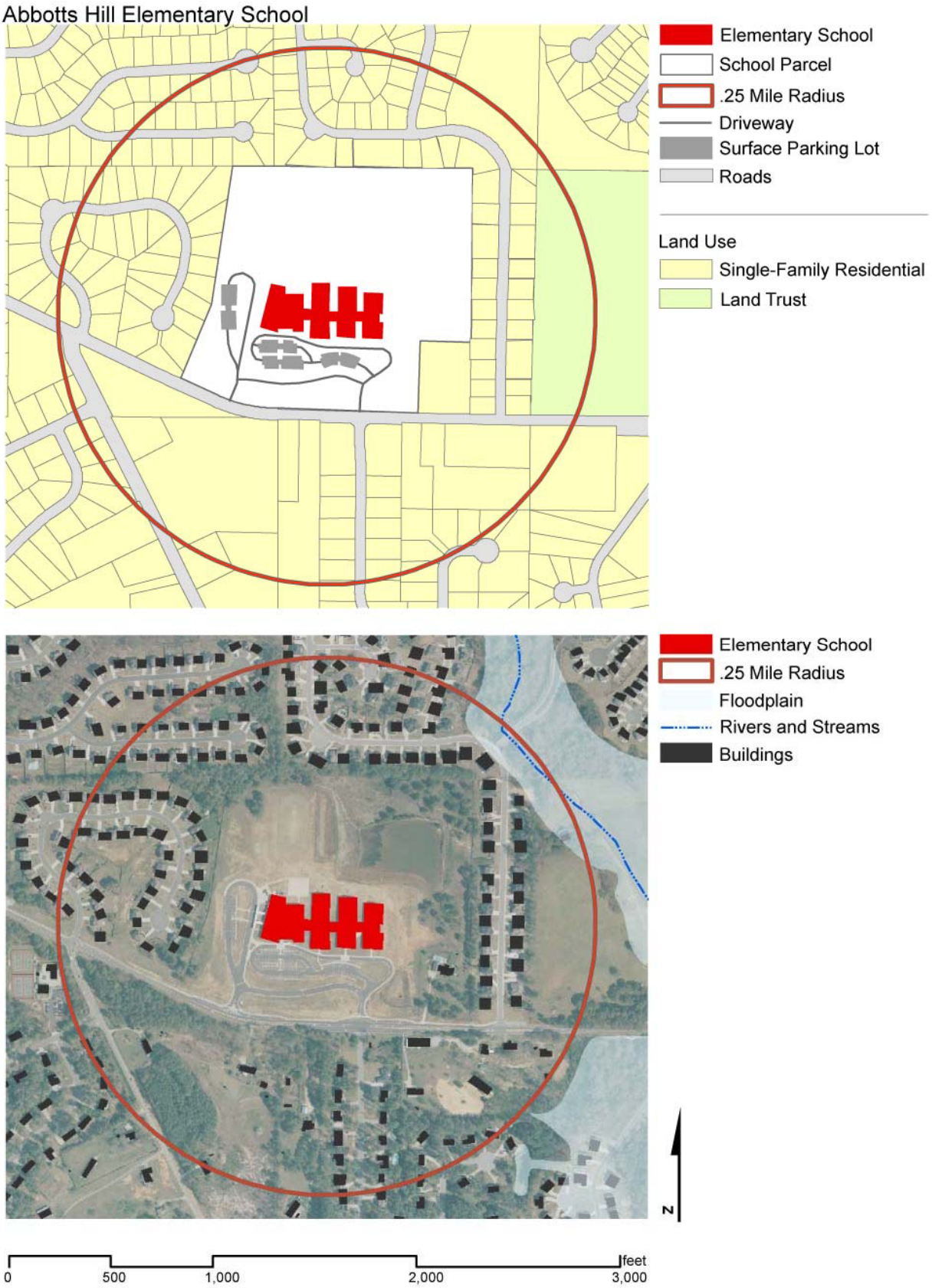


Figure B.1: All Fulton County Elementary Schools



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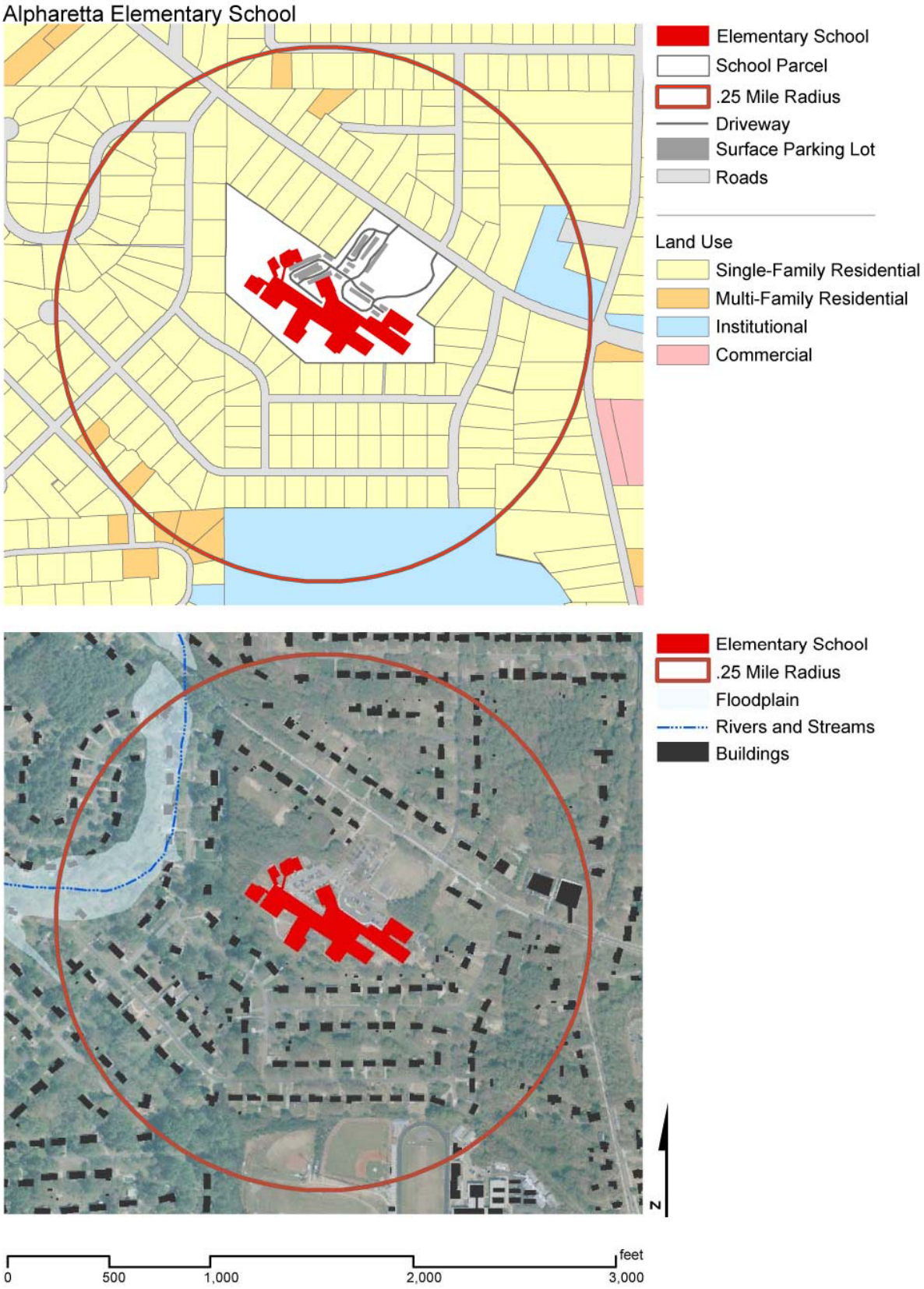

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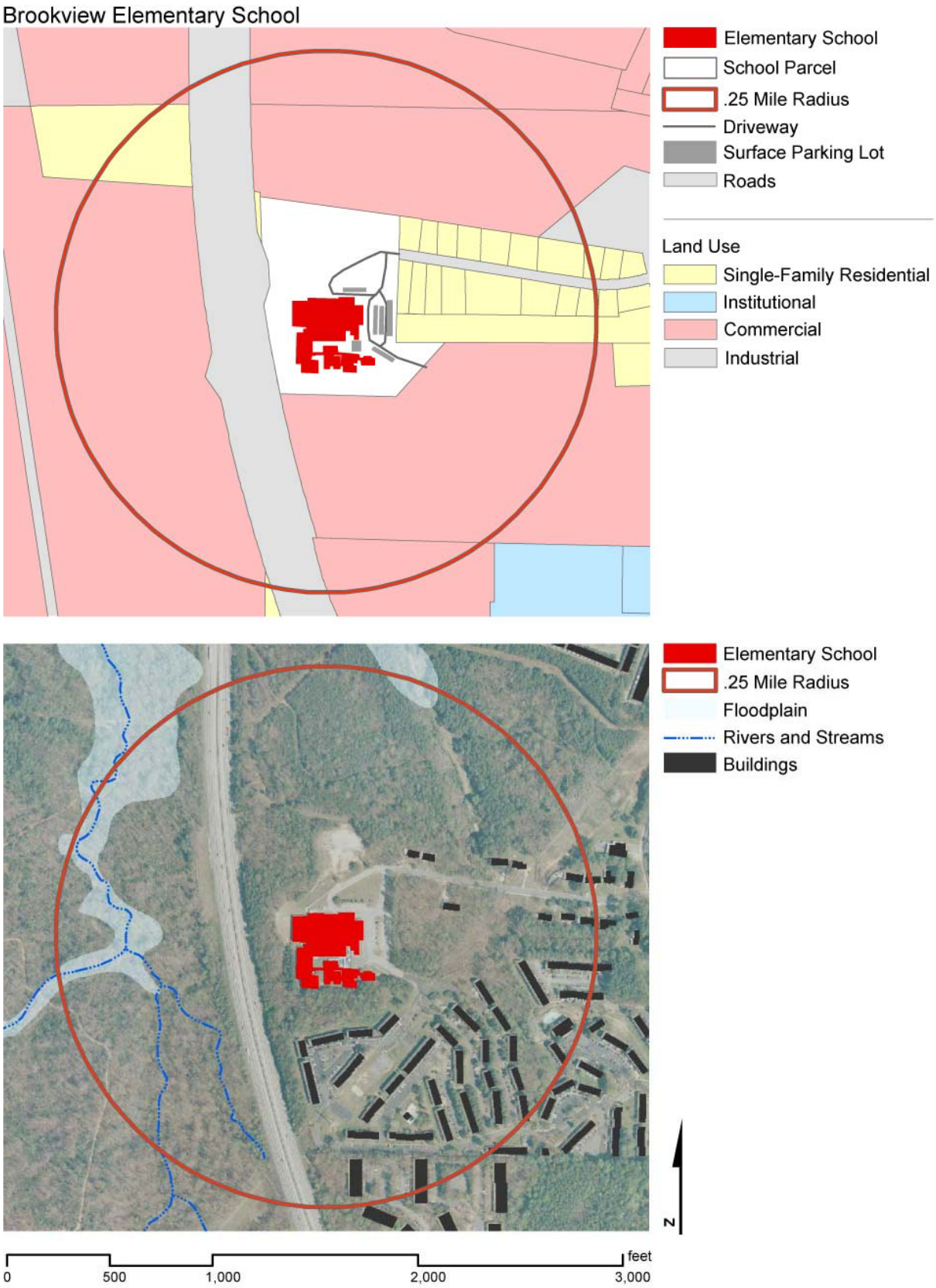

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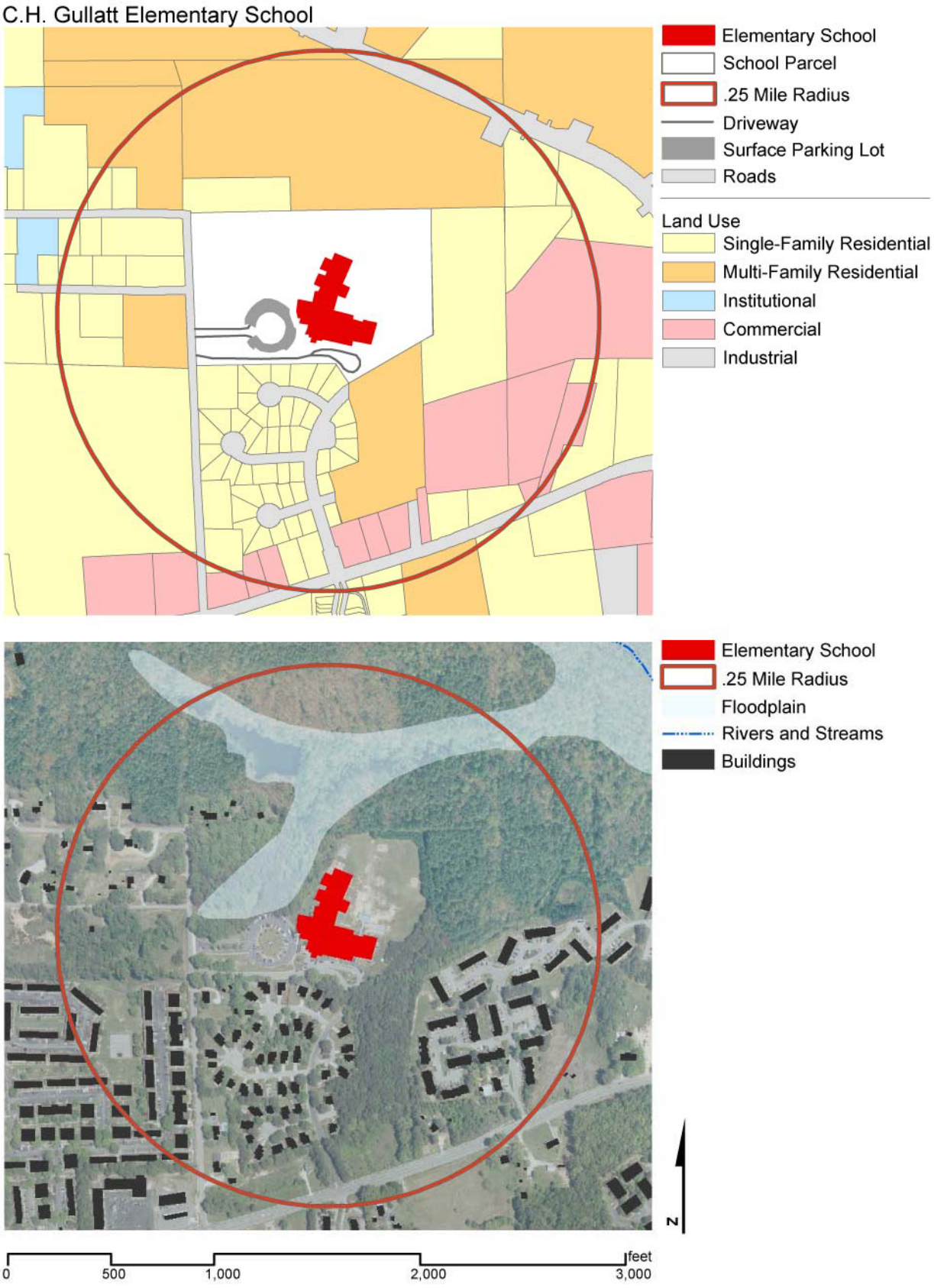

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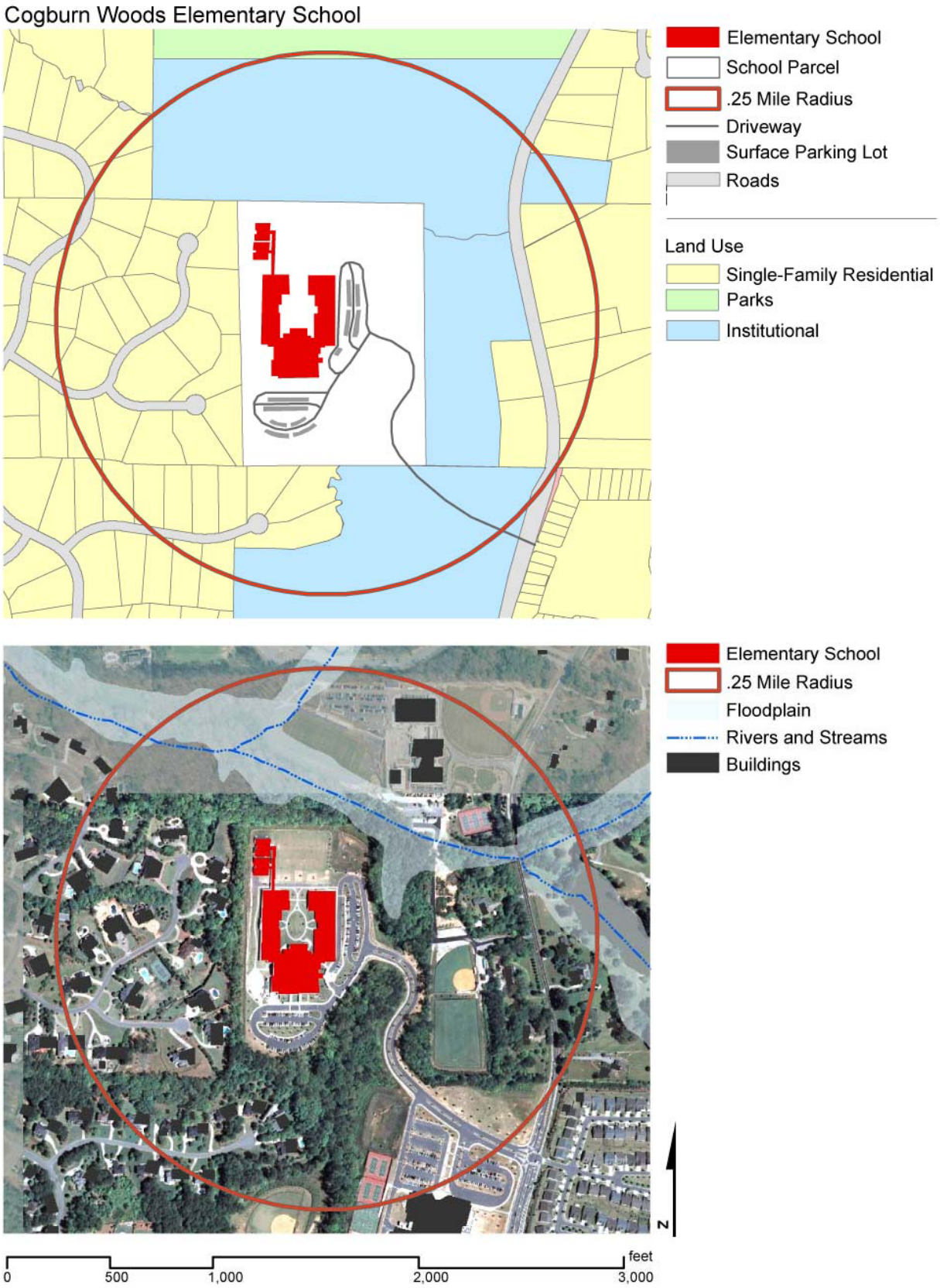

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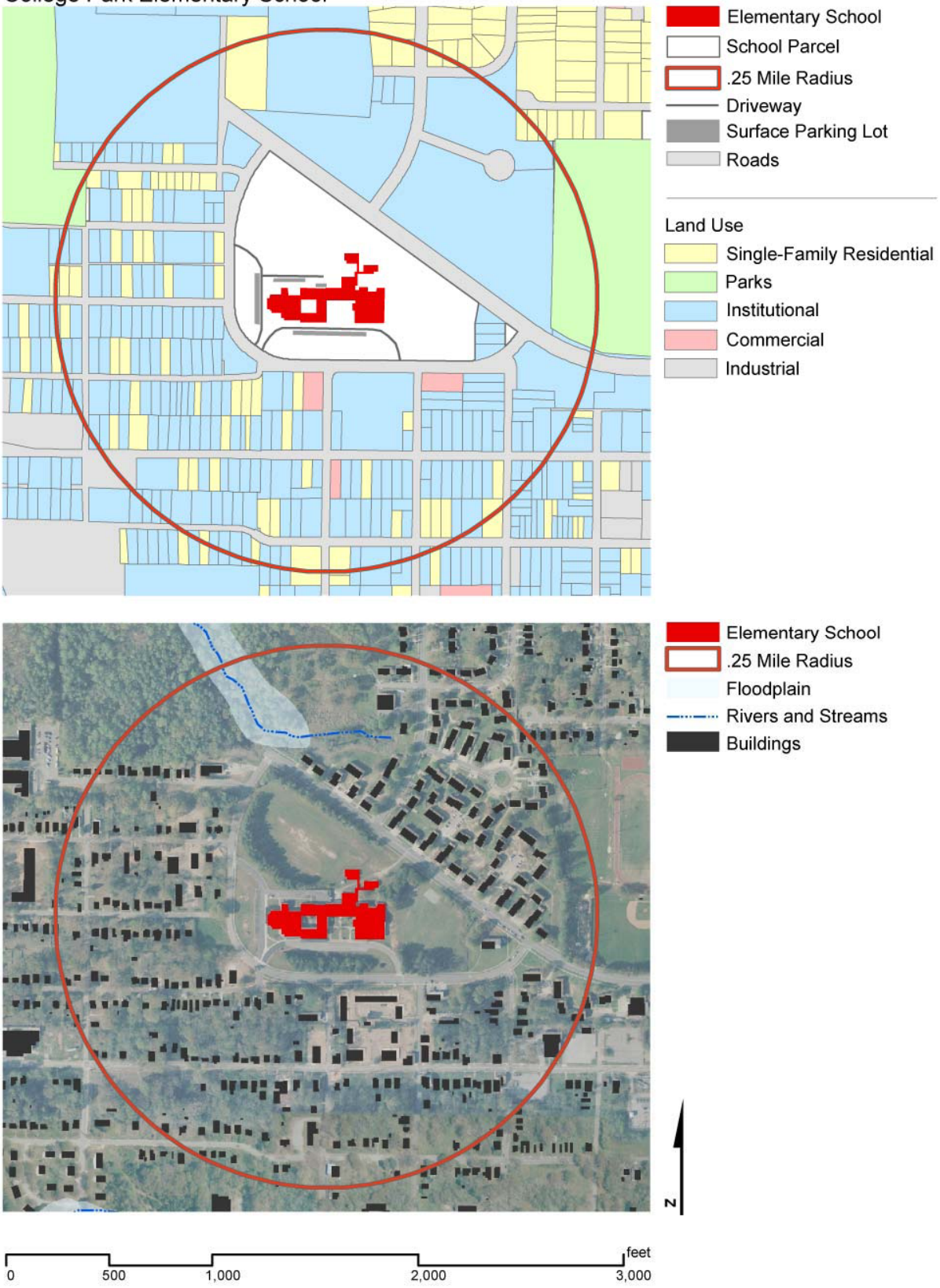
College Park Elementary School



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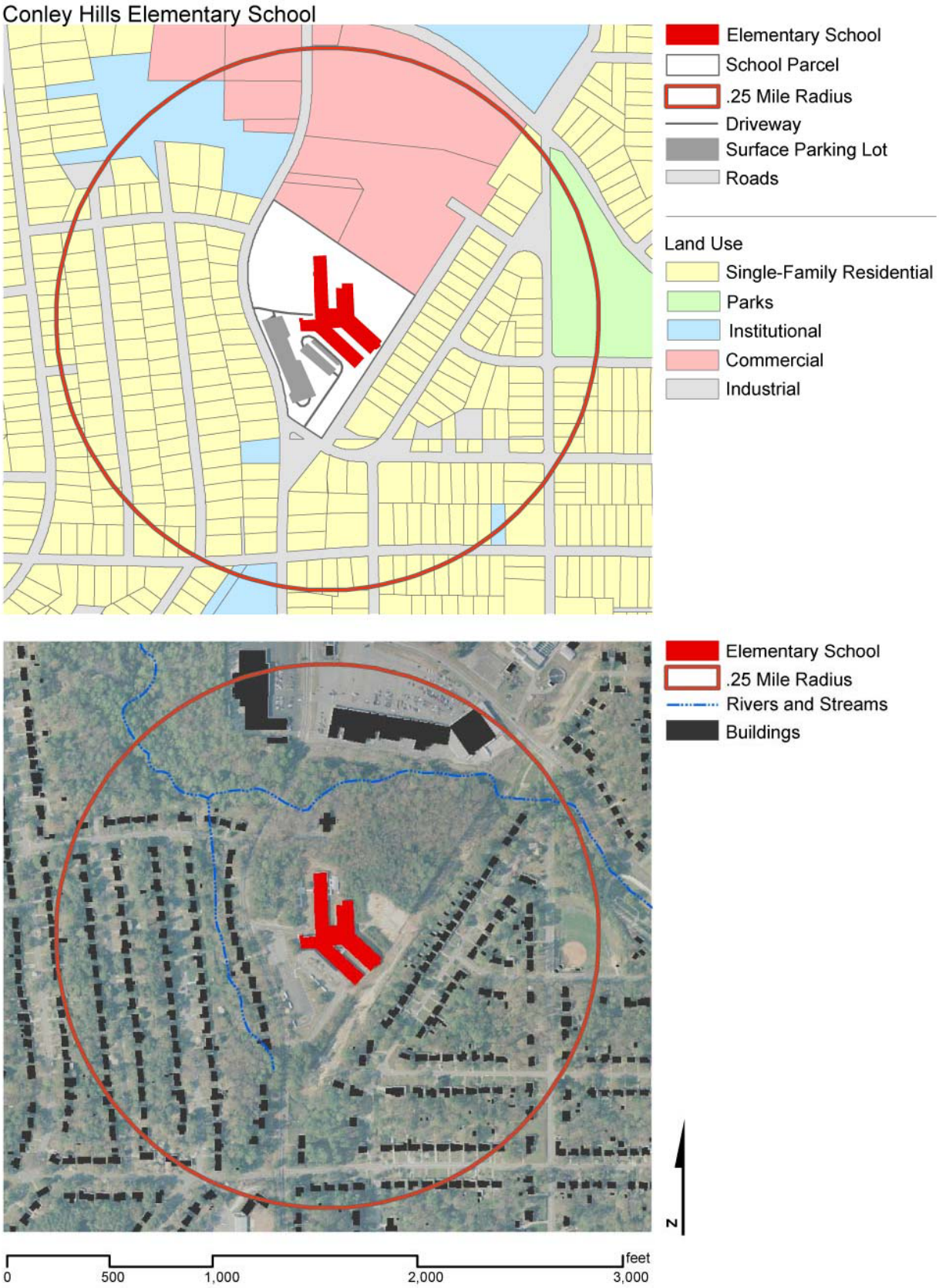

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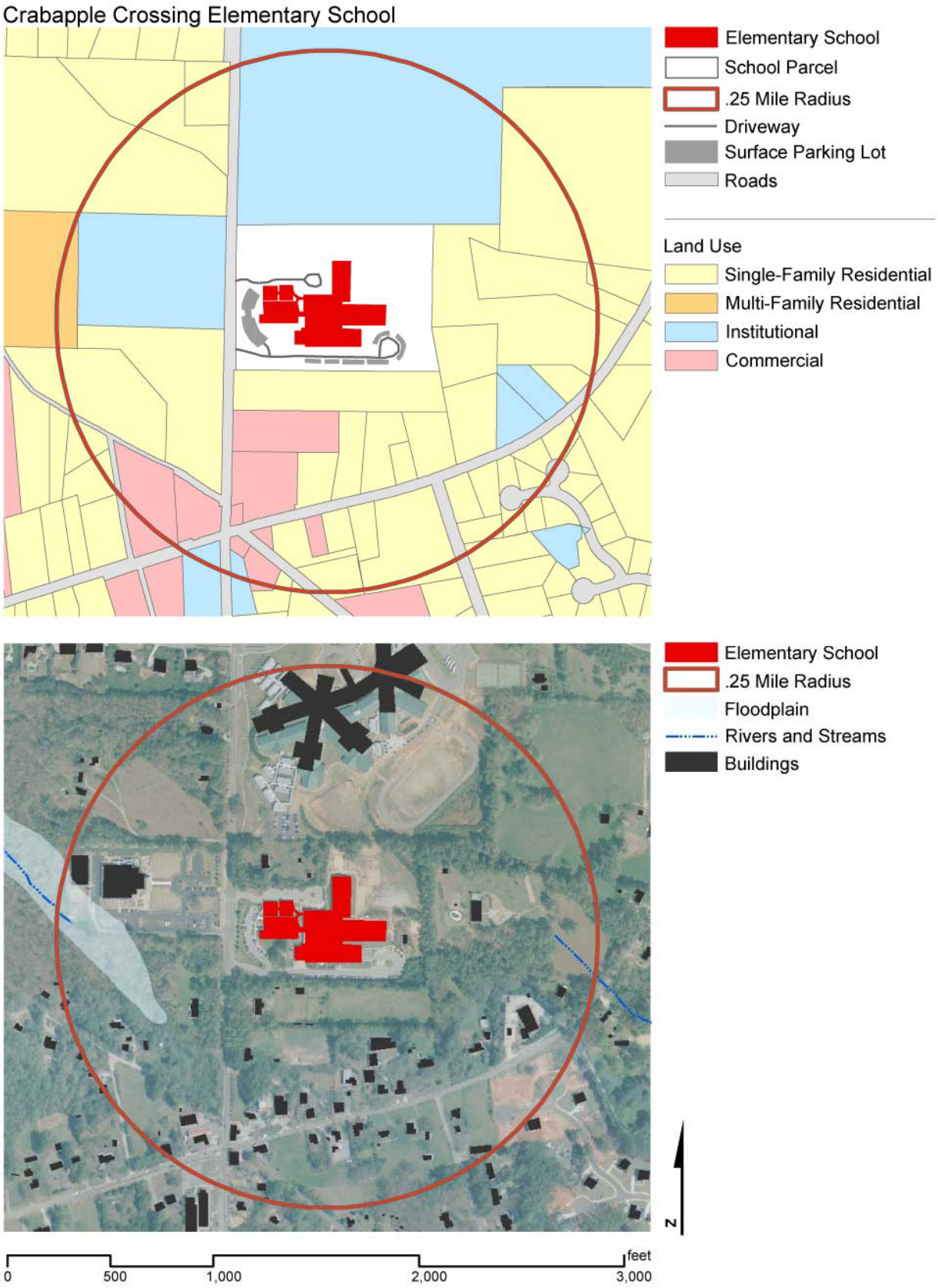

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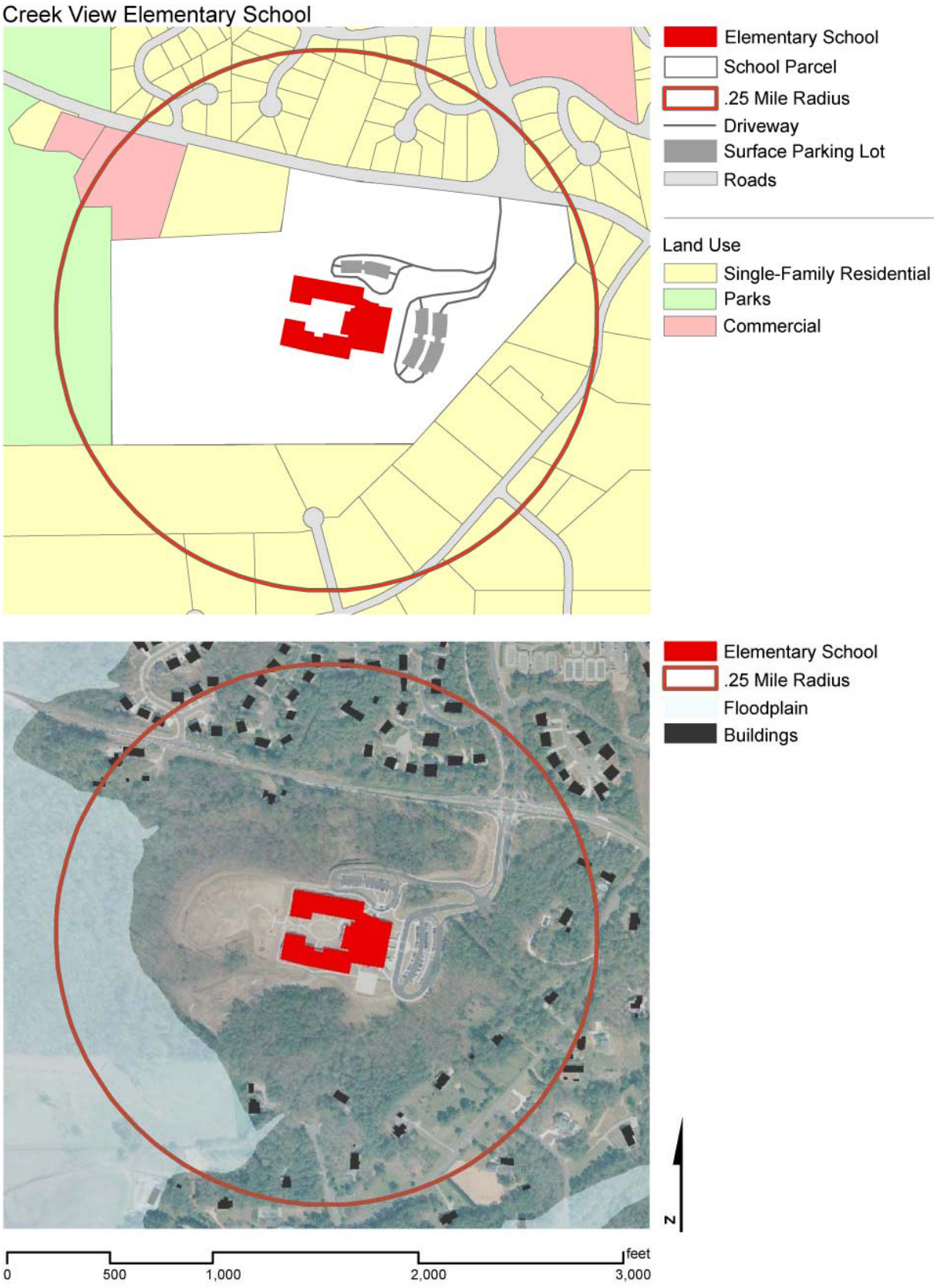

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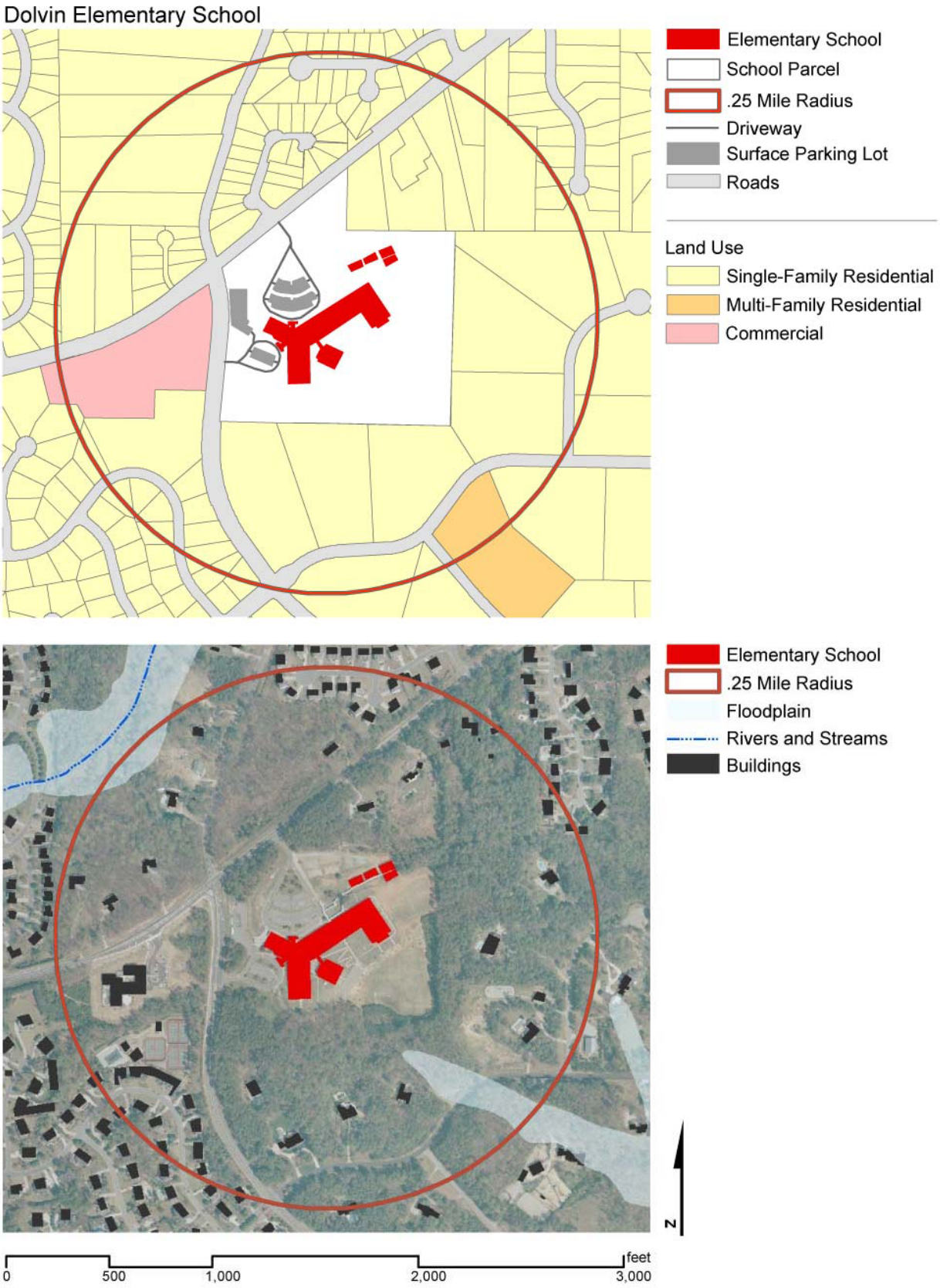

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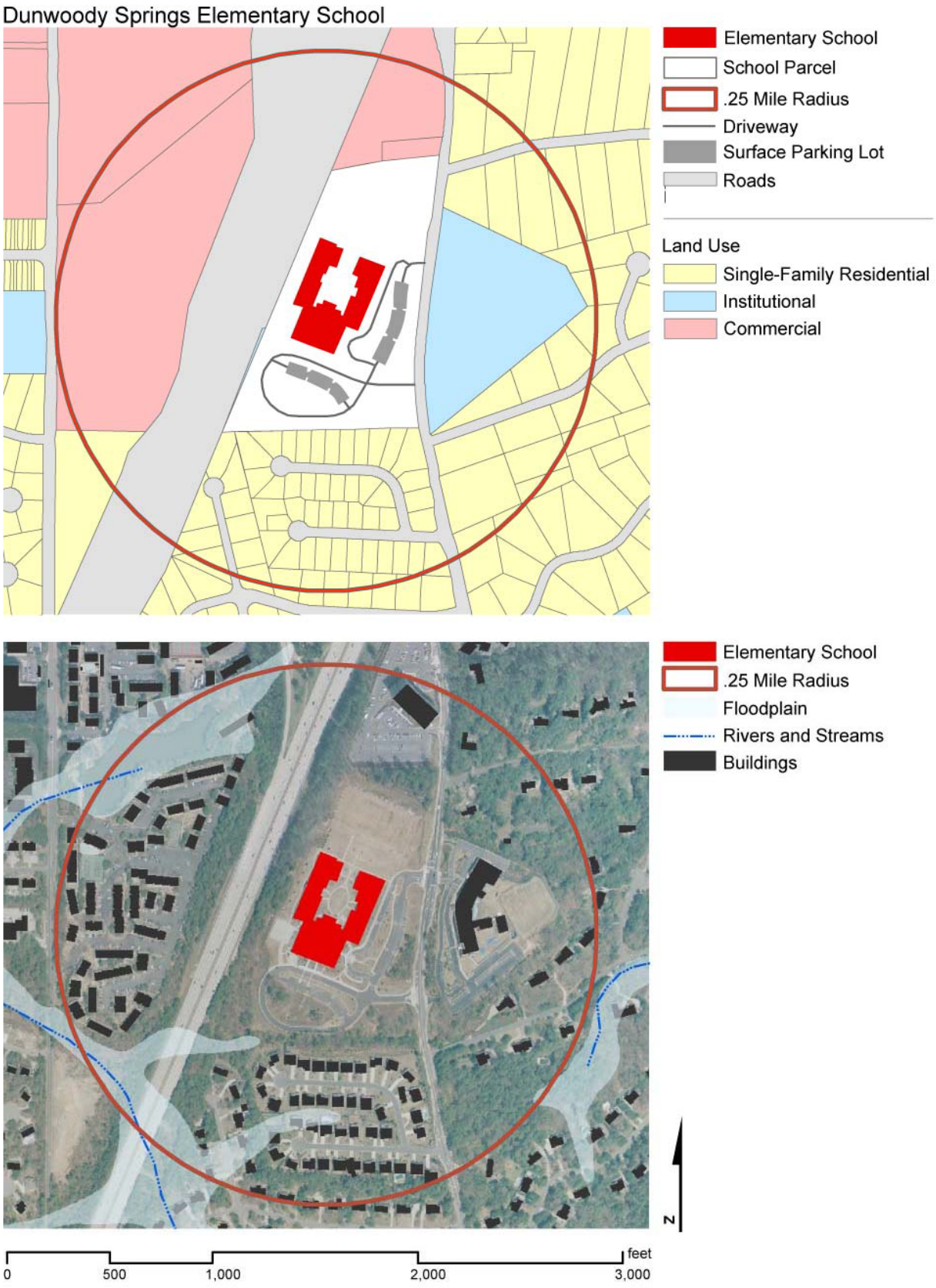

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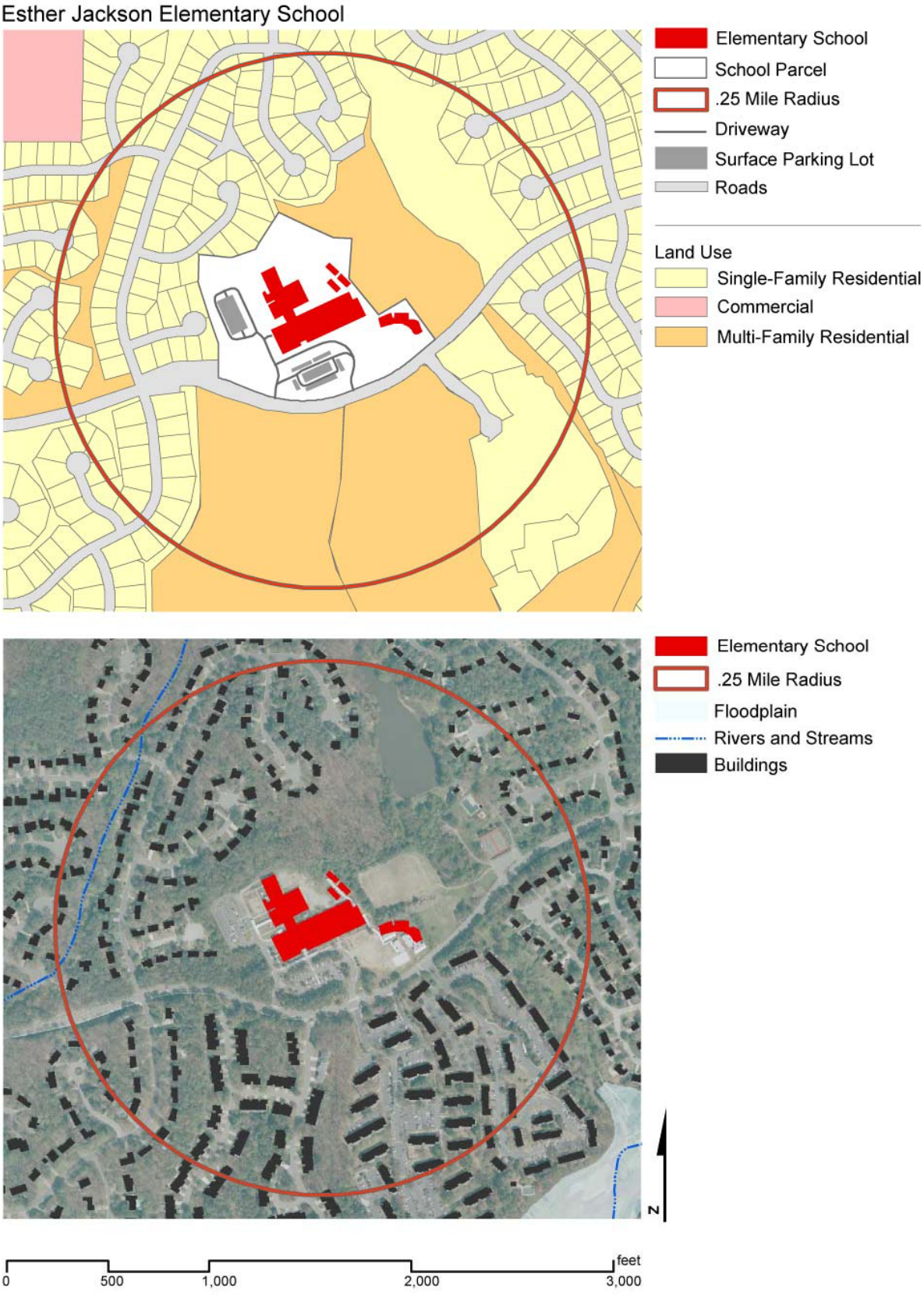

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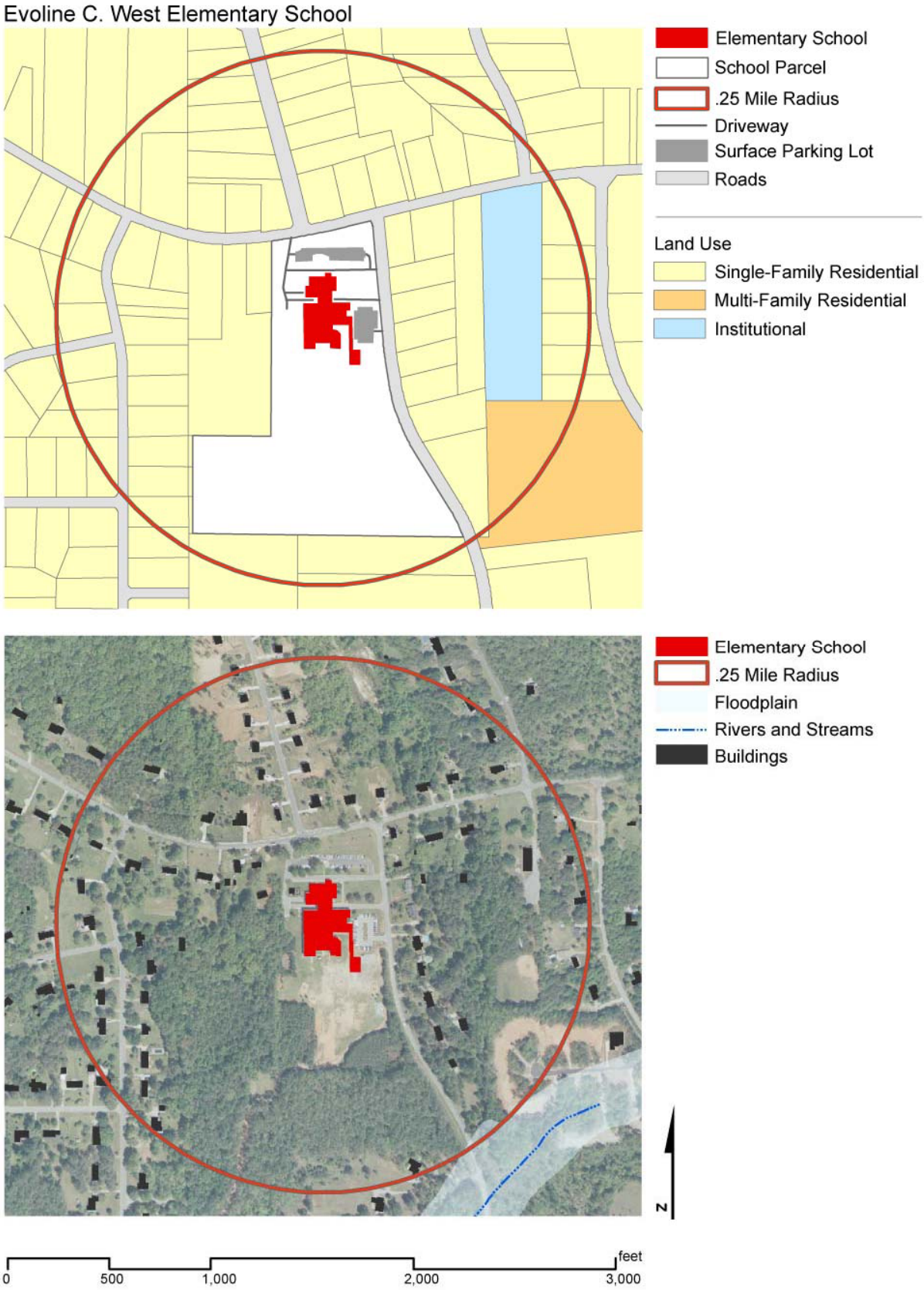

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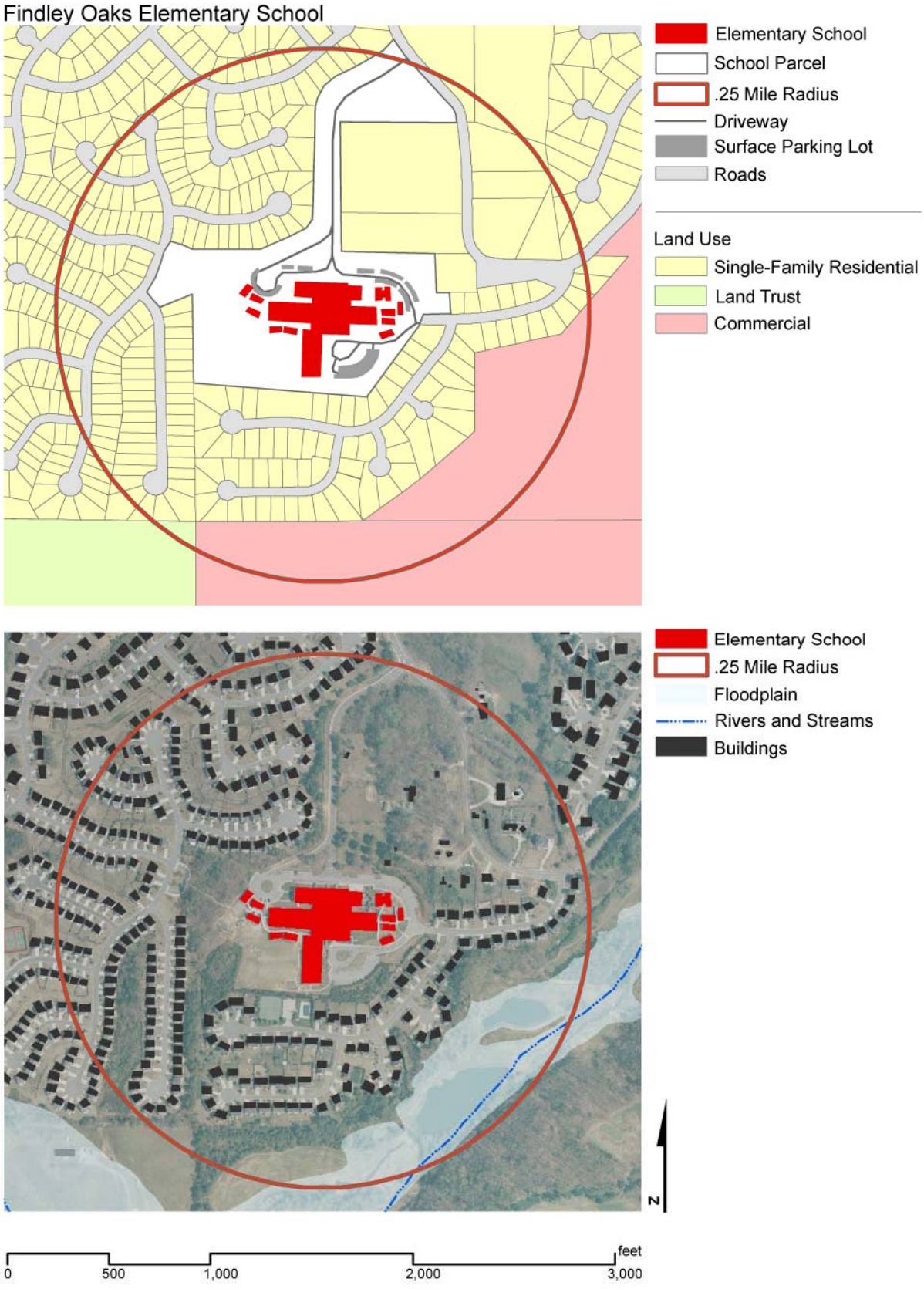

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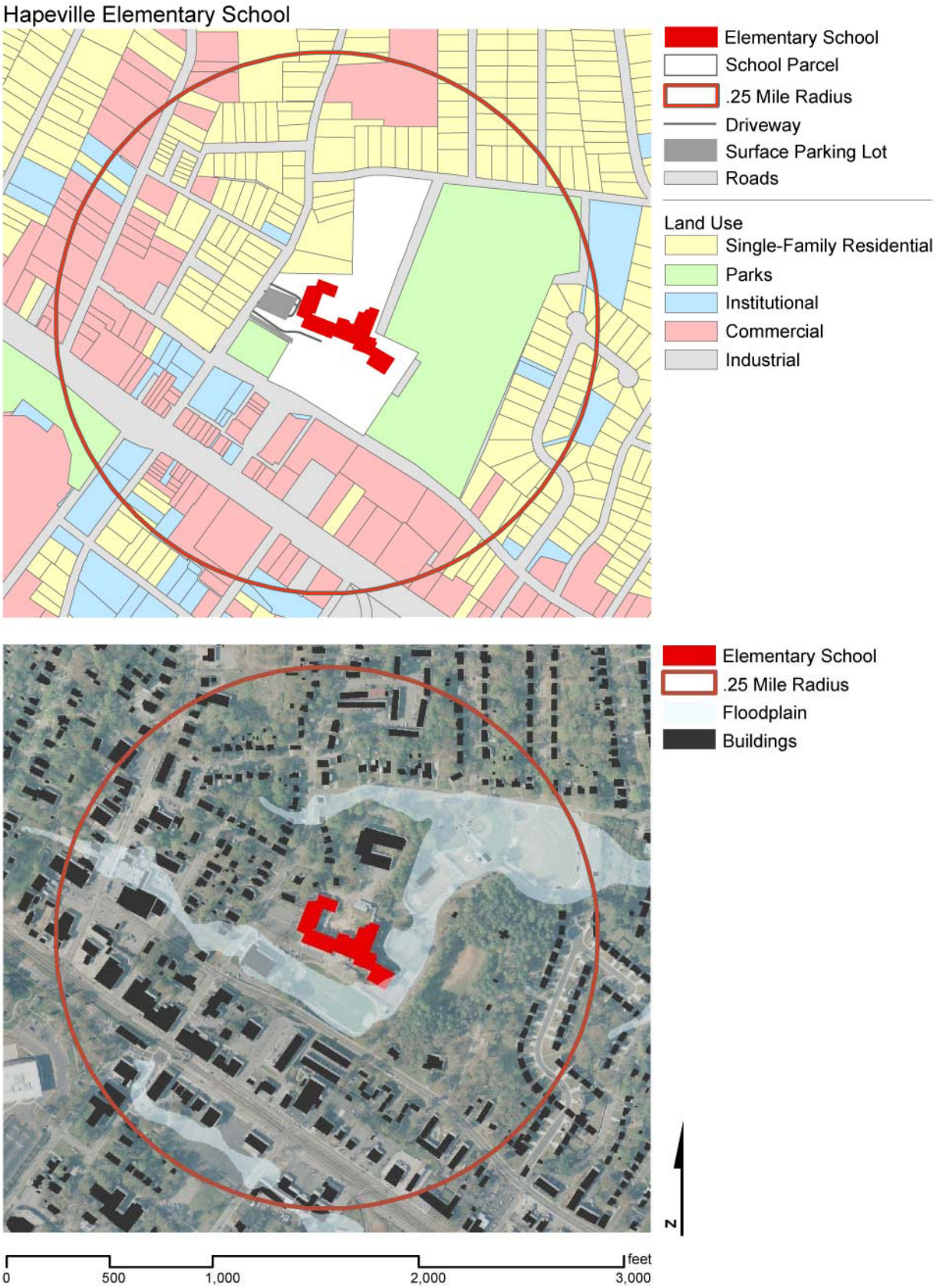

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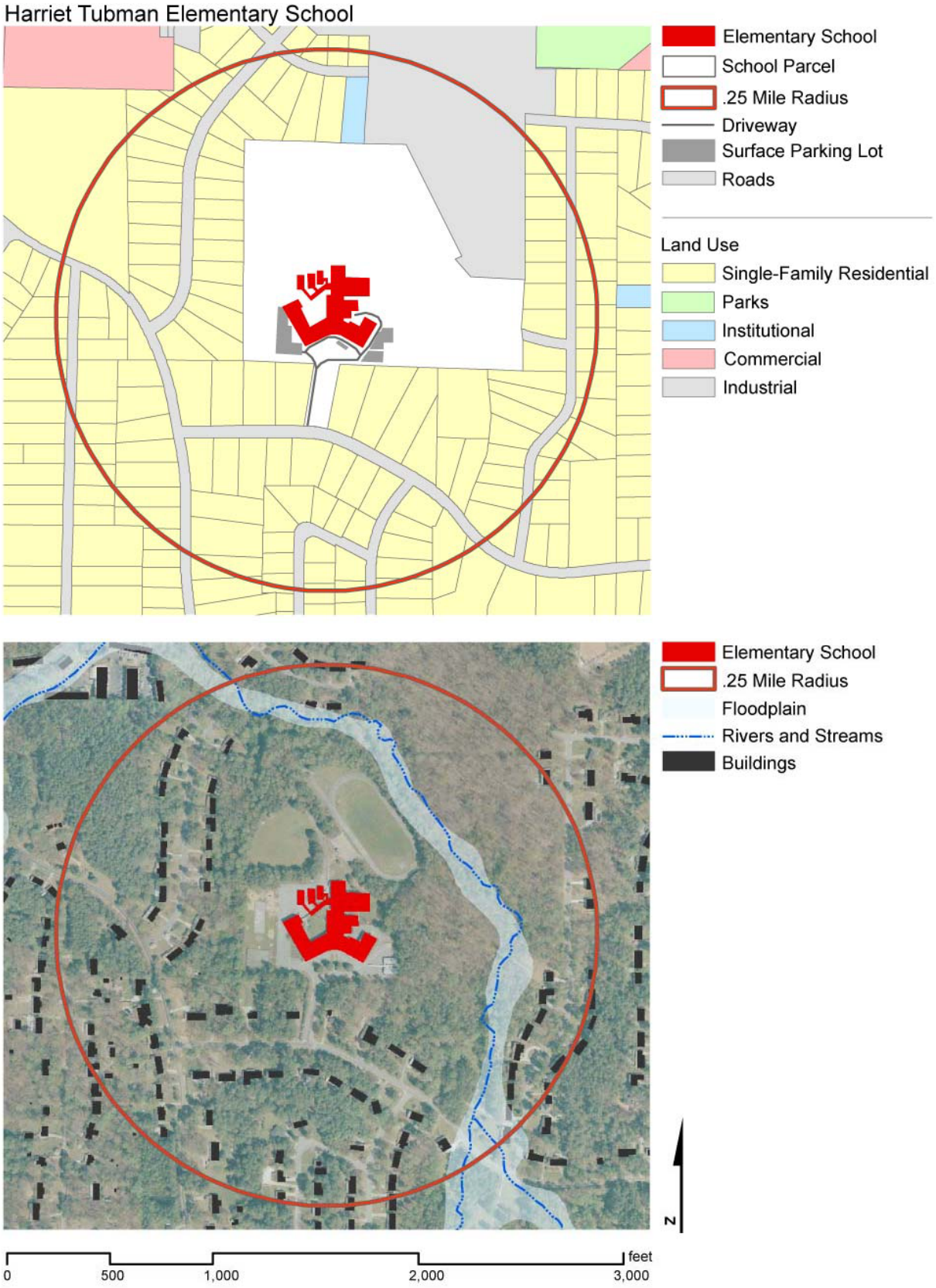

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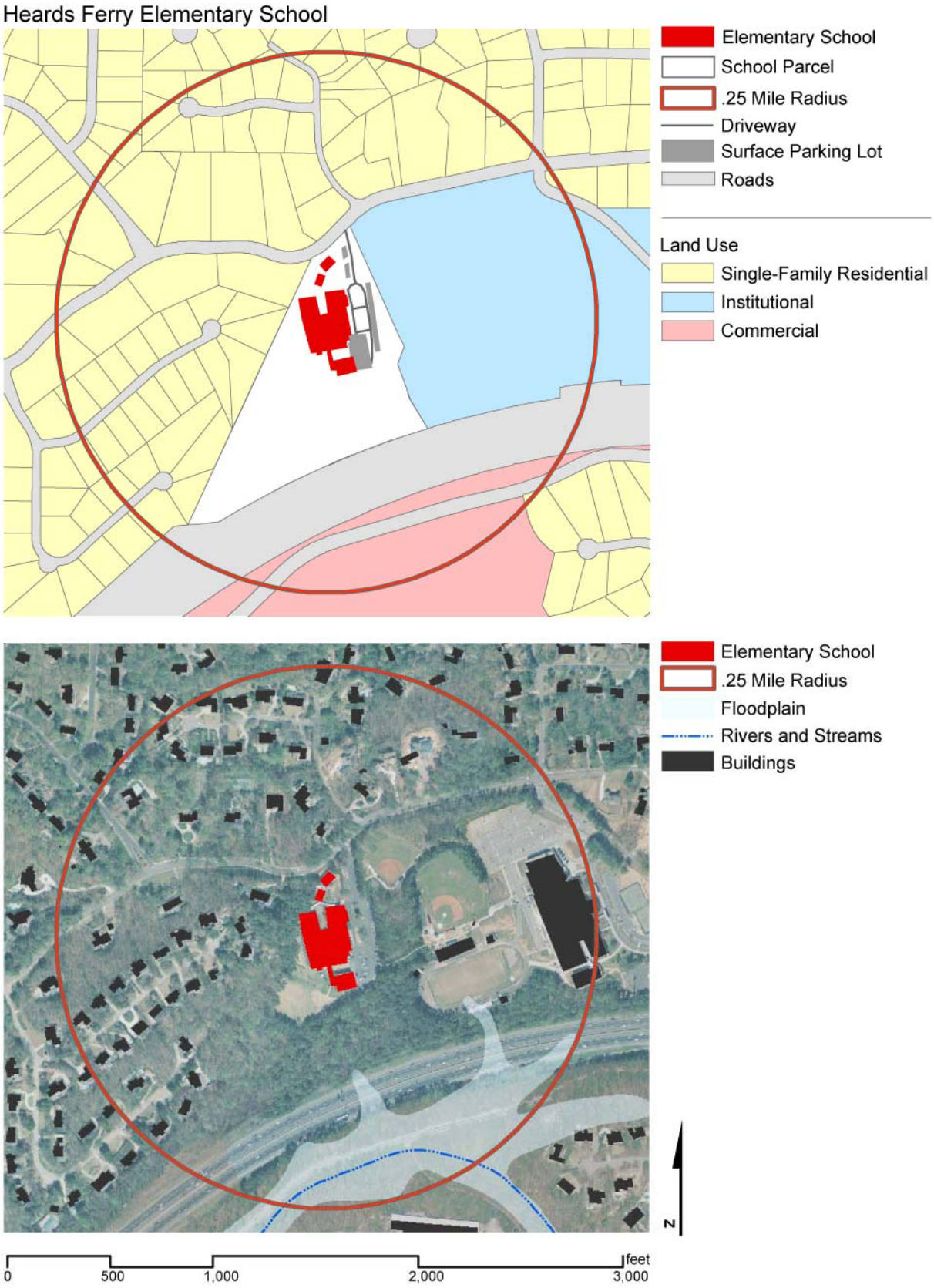

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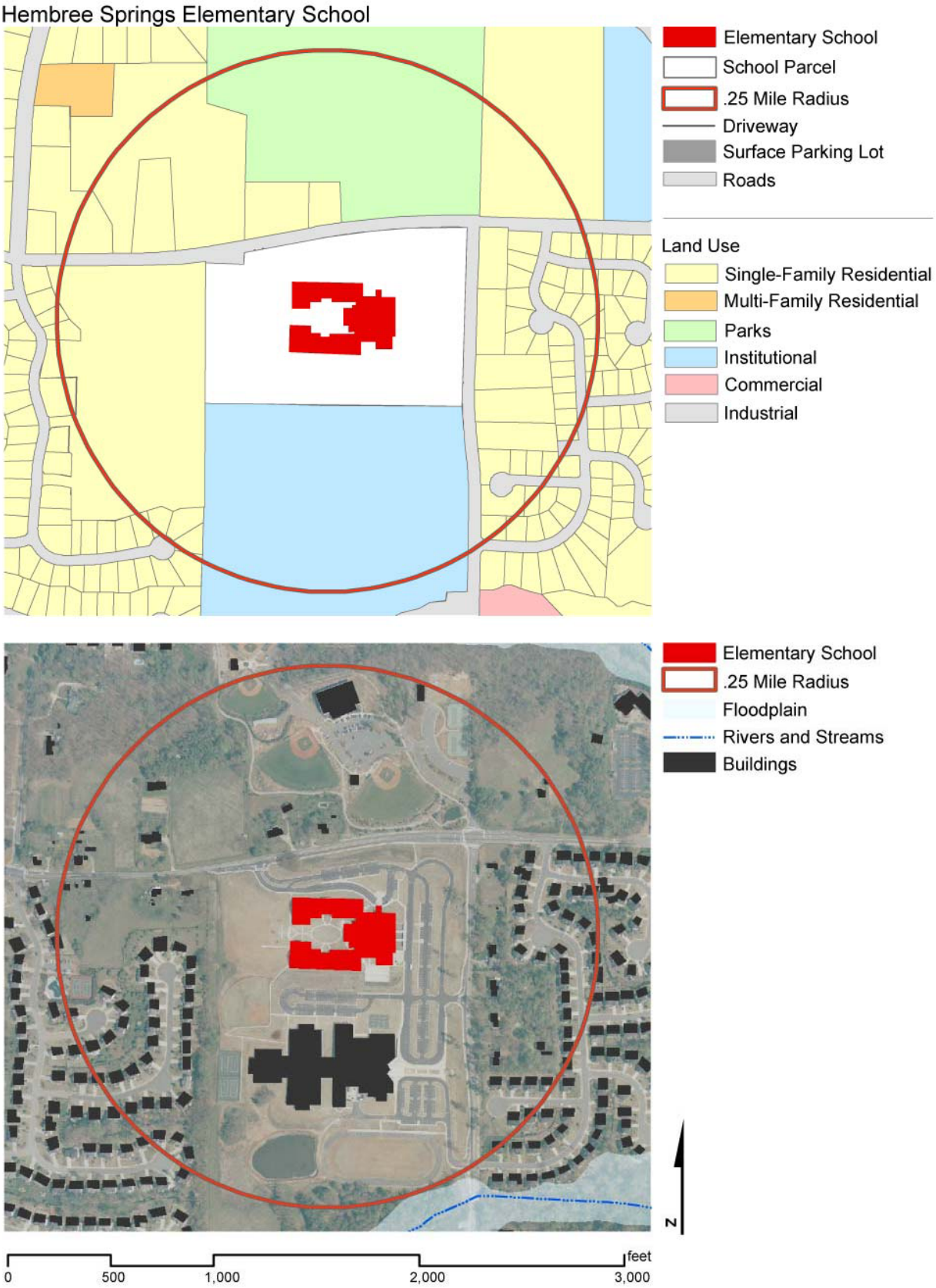

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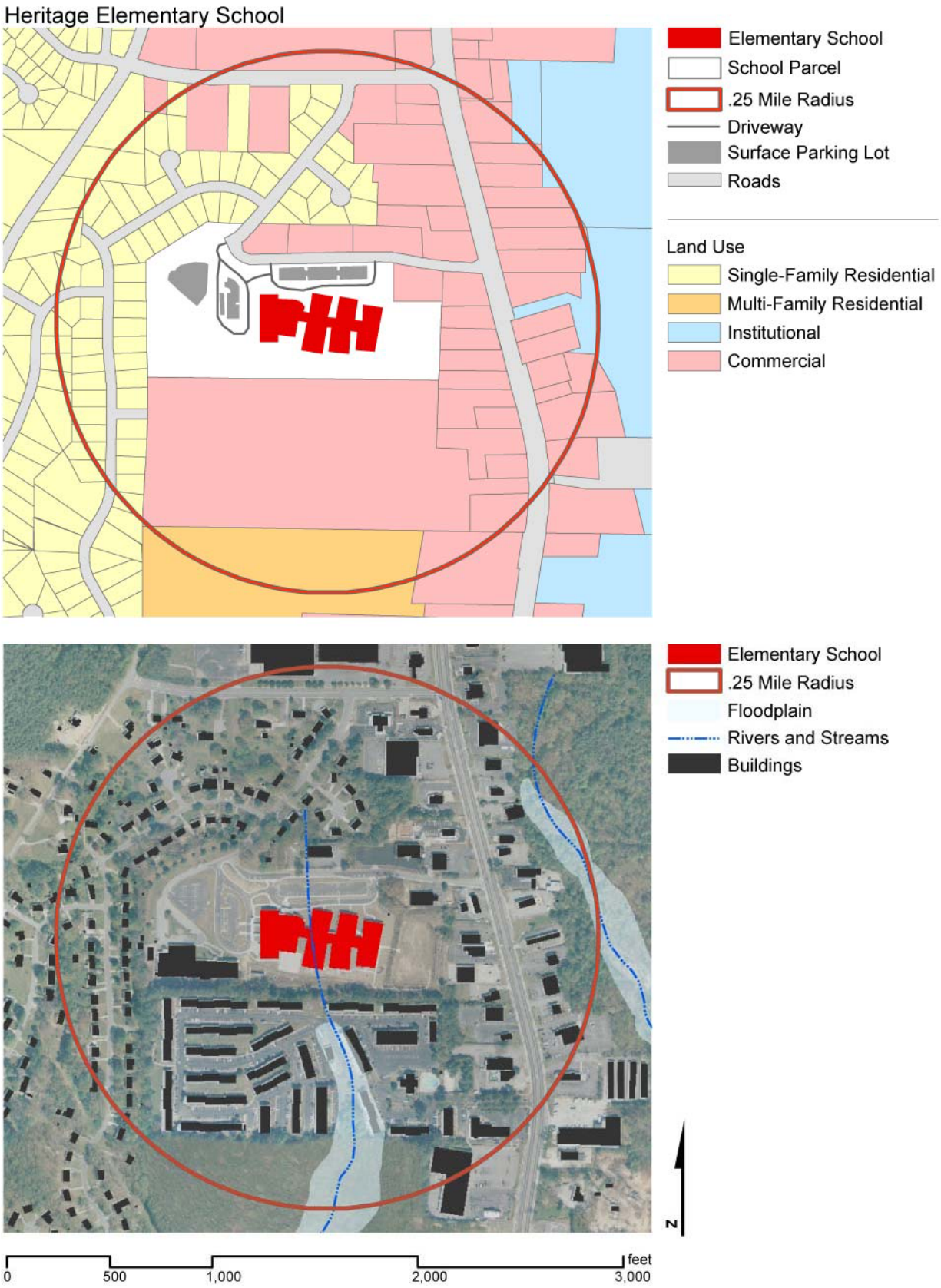

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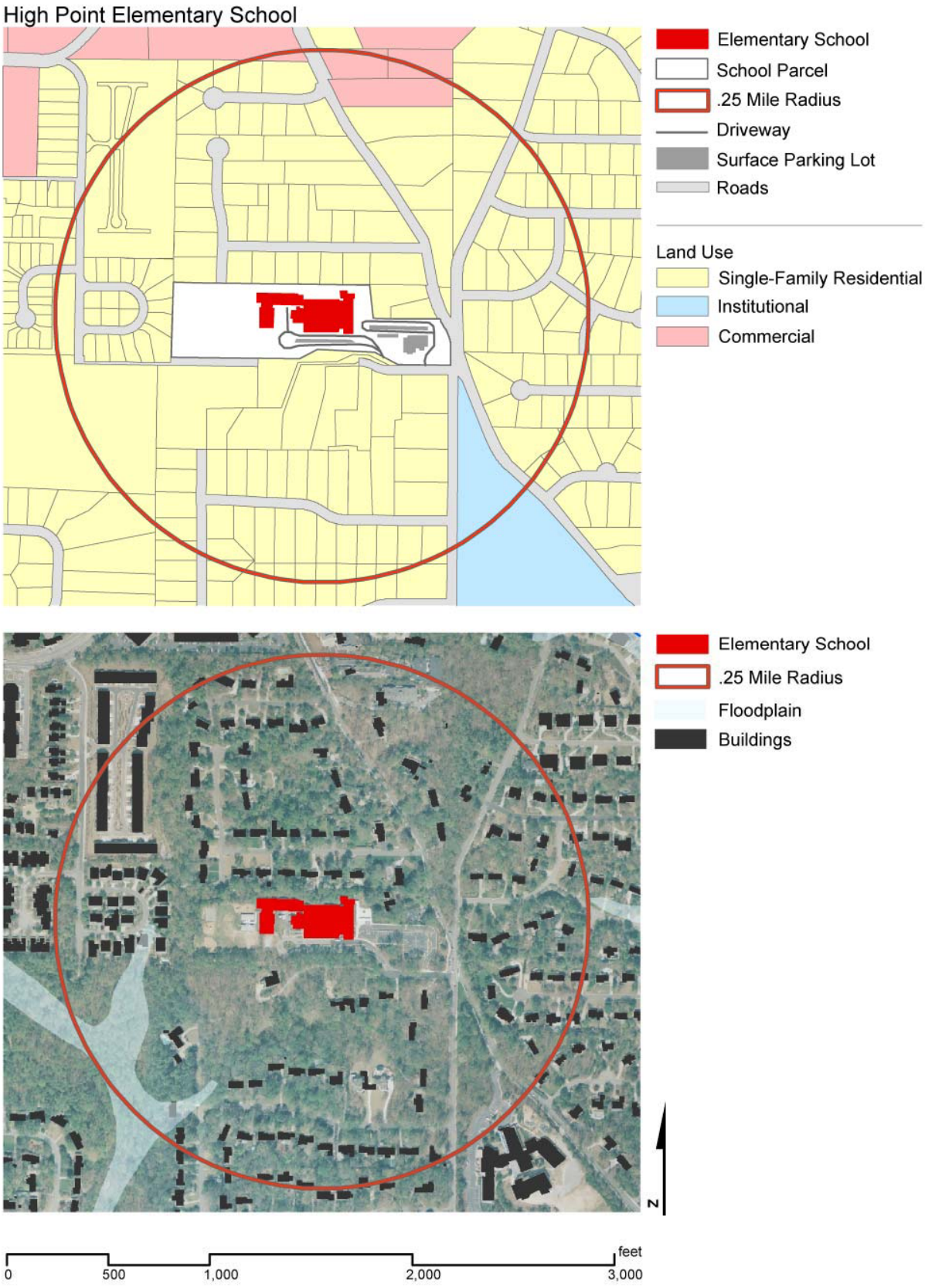

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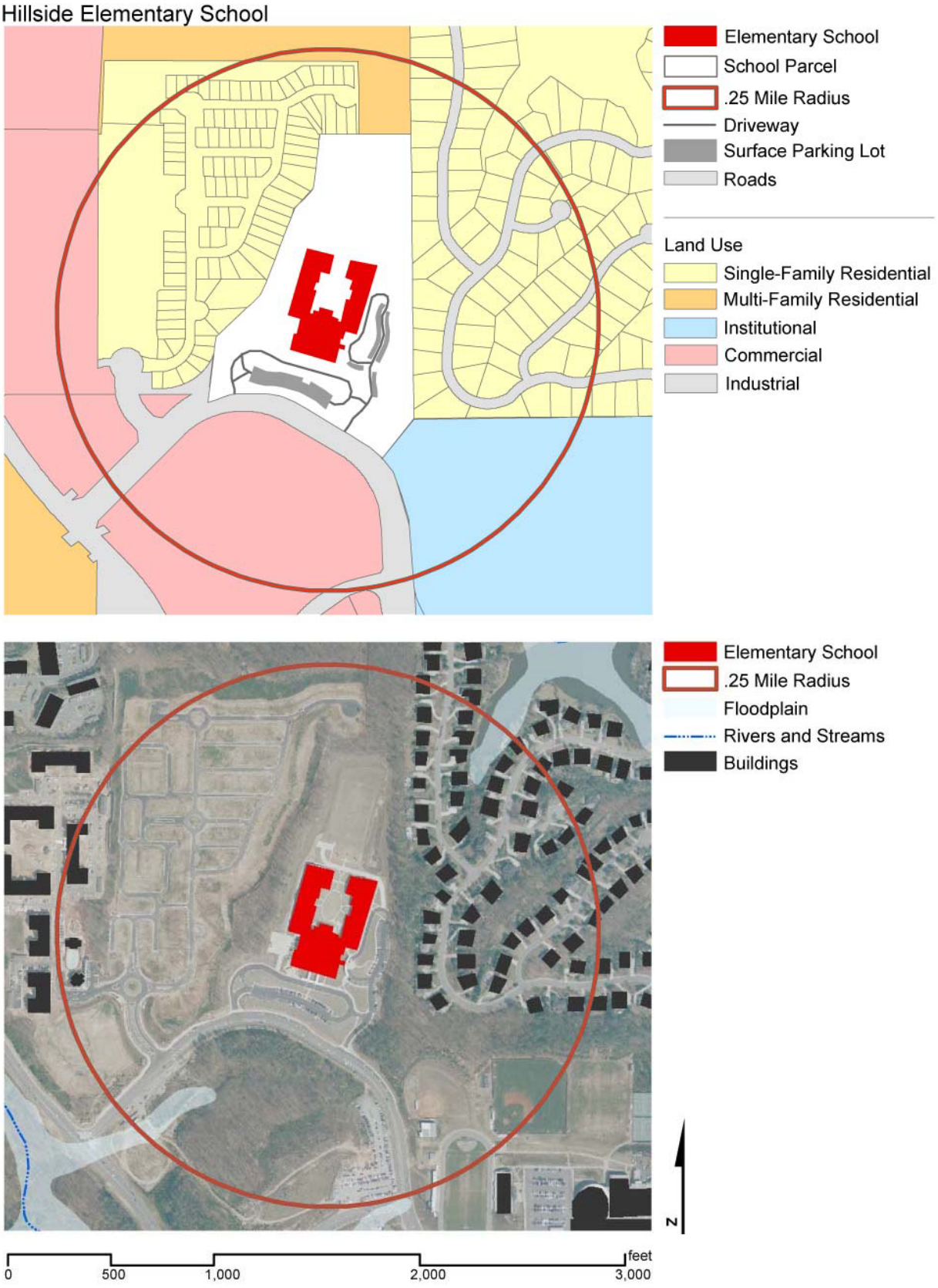

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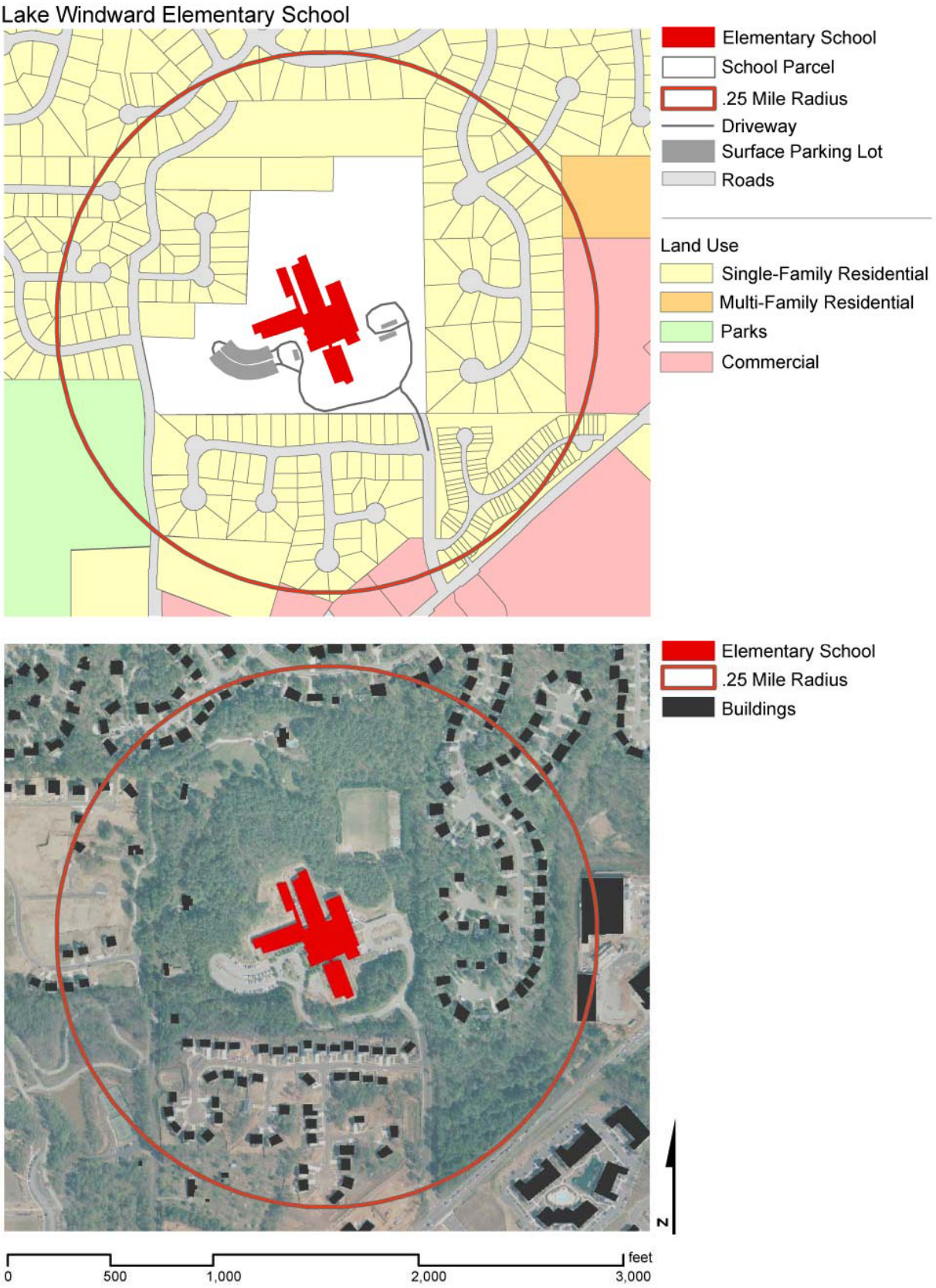

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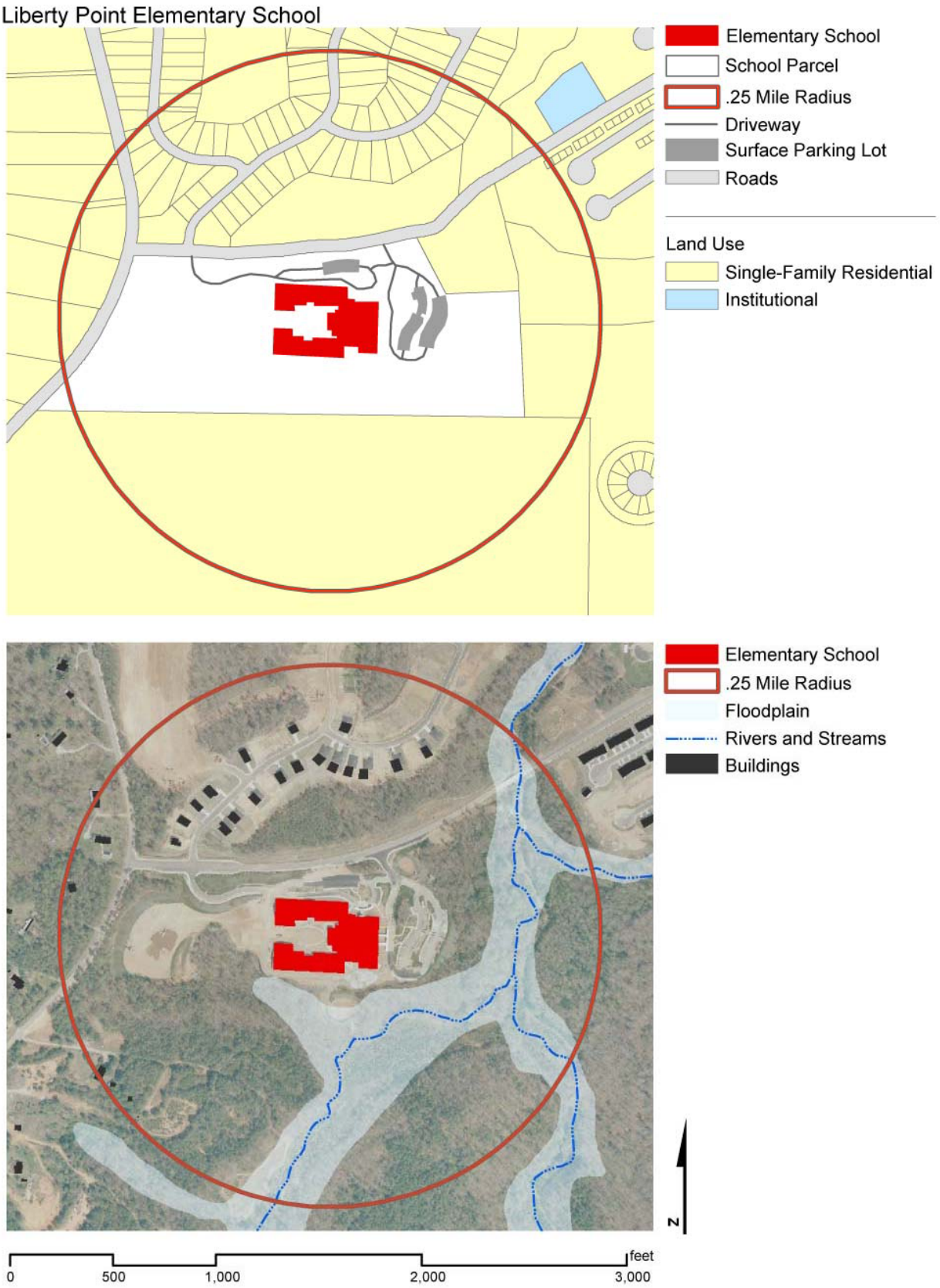

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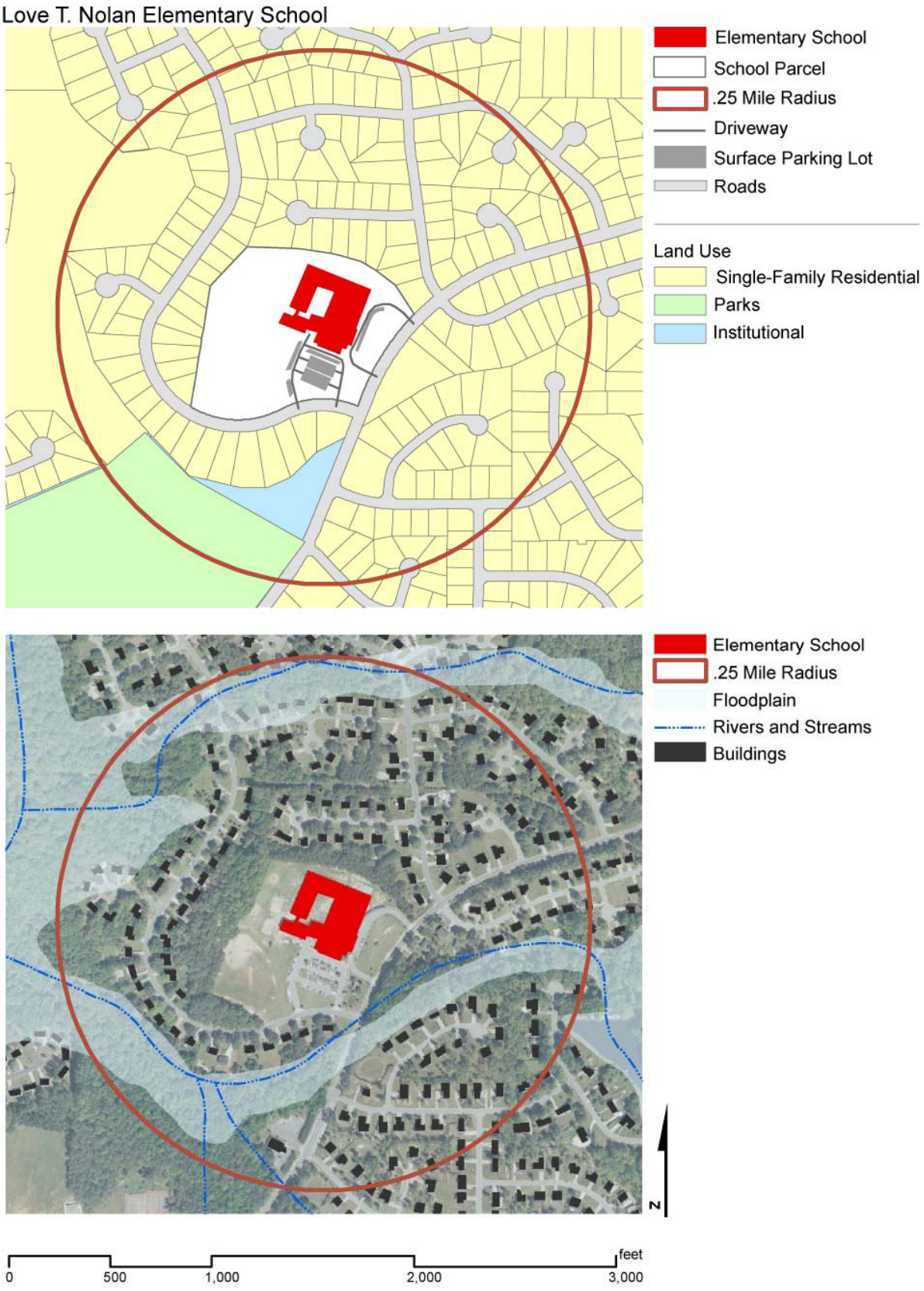

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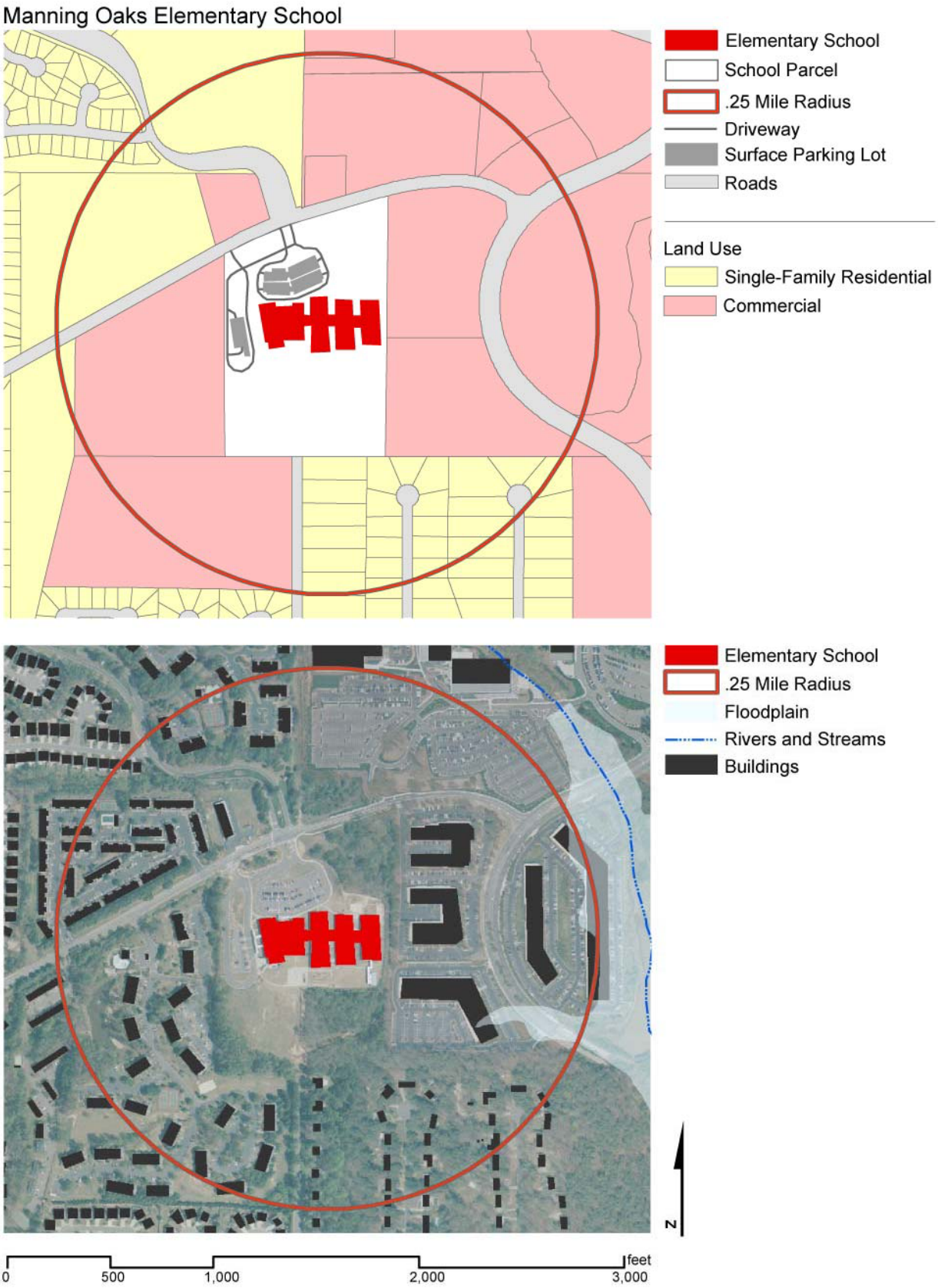

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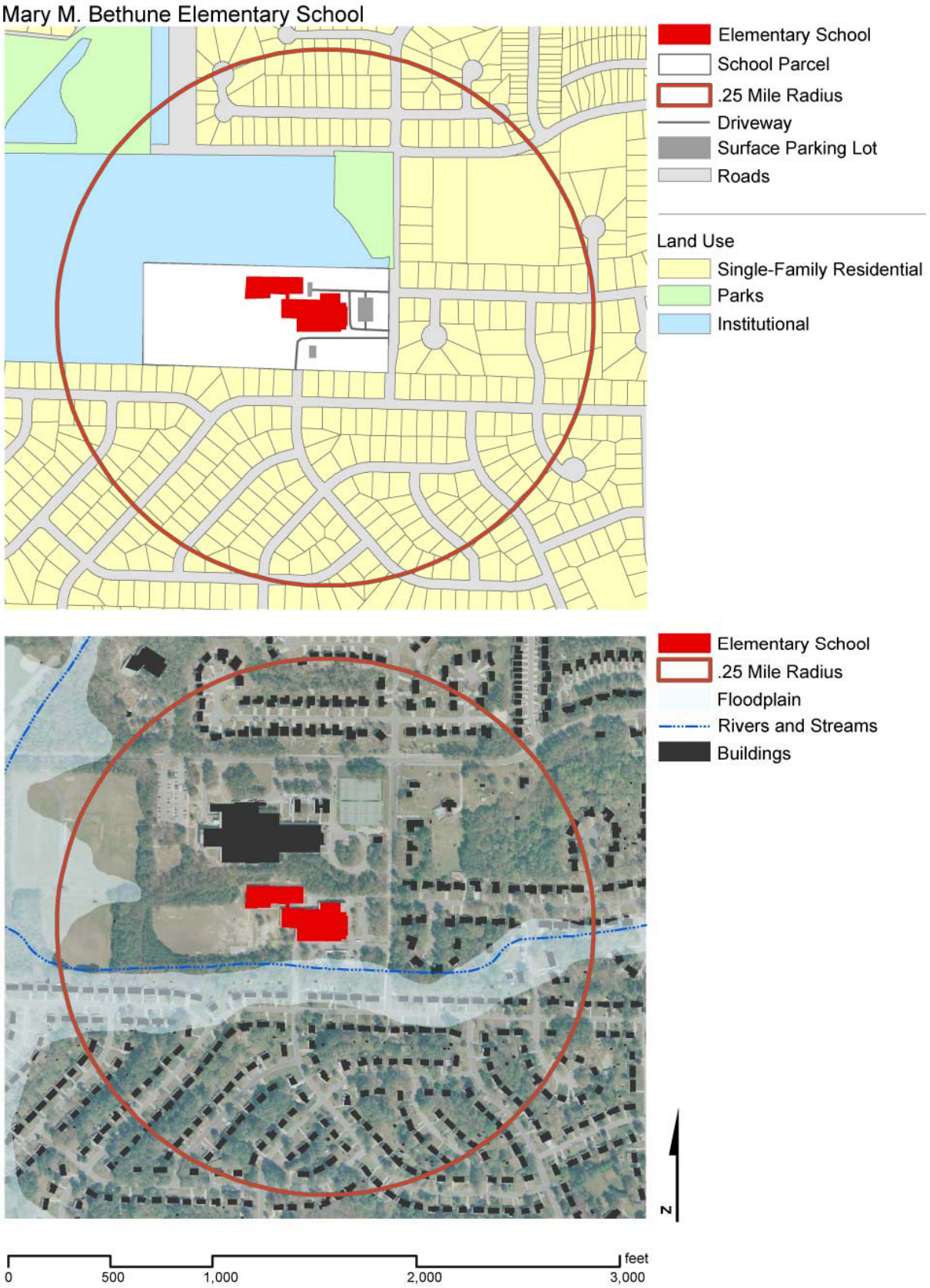

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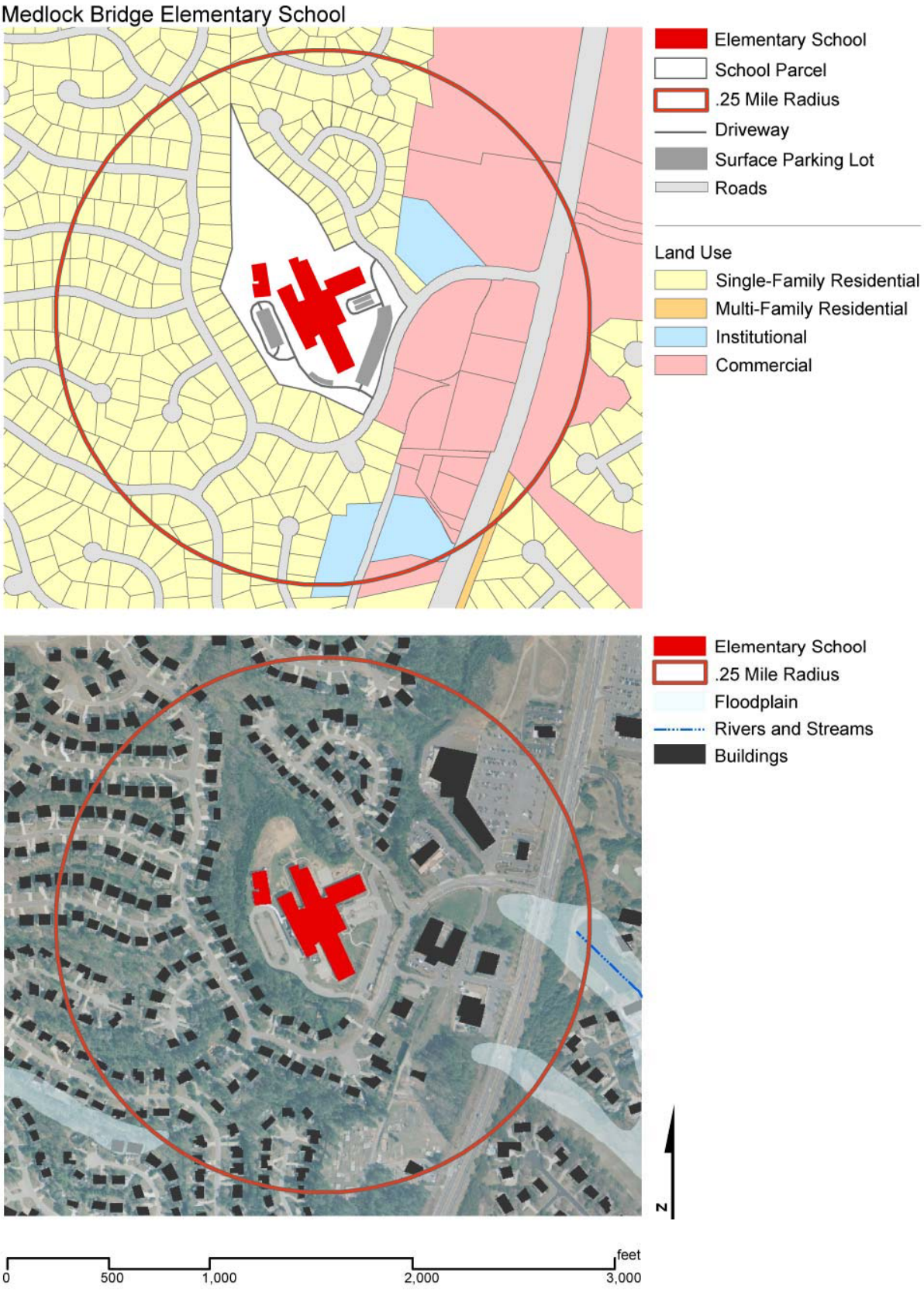

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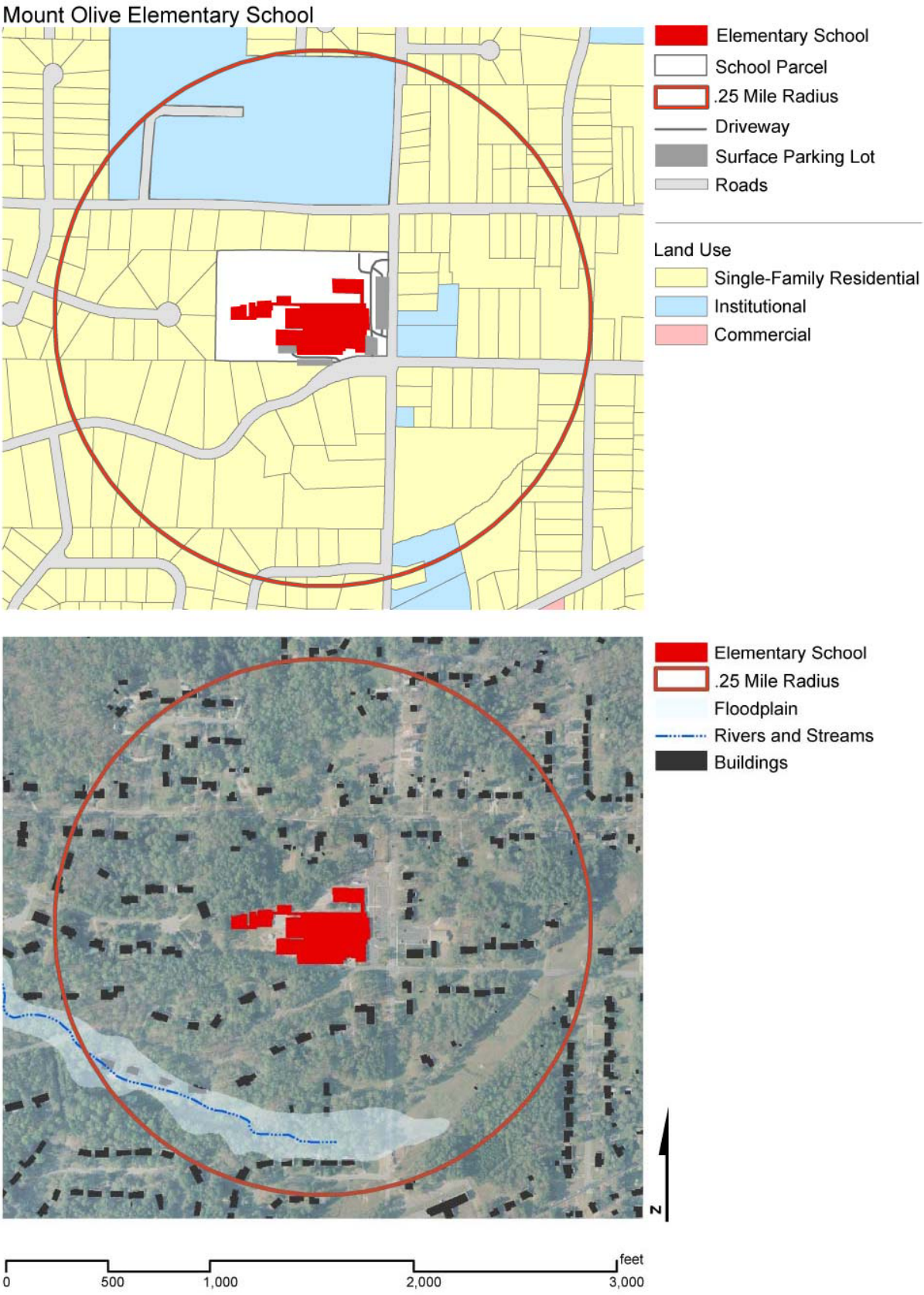

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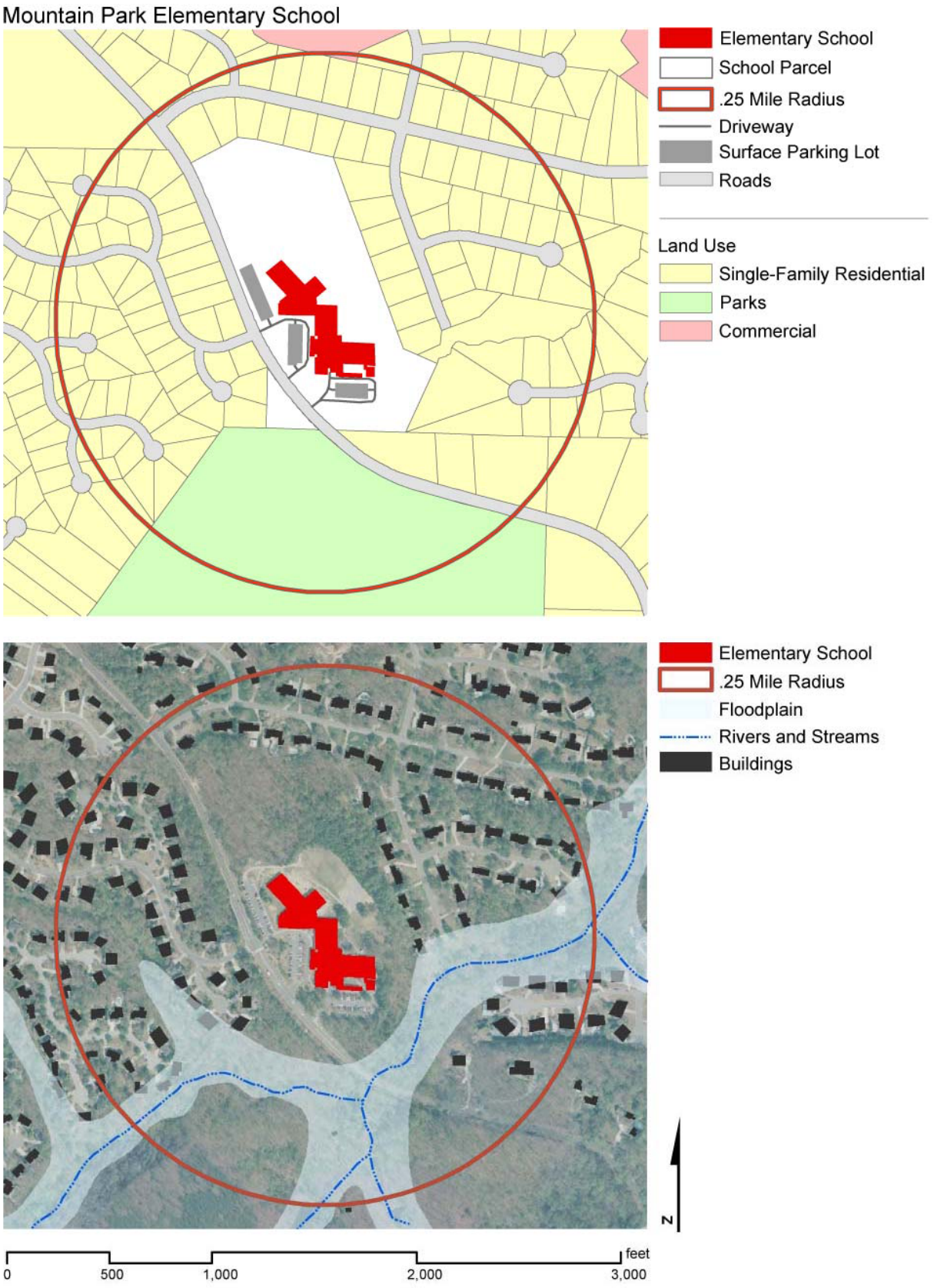

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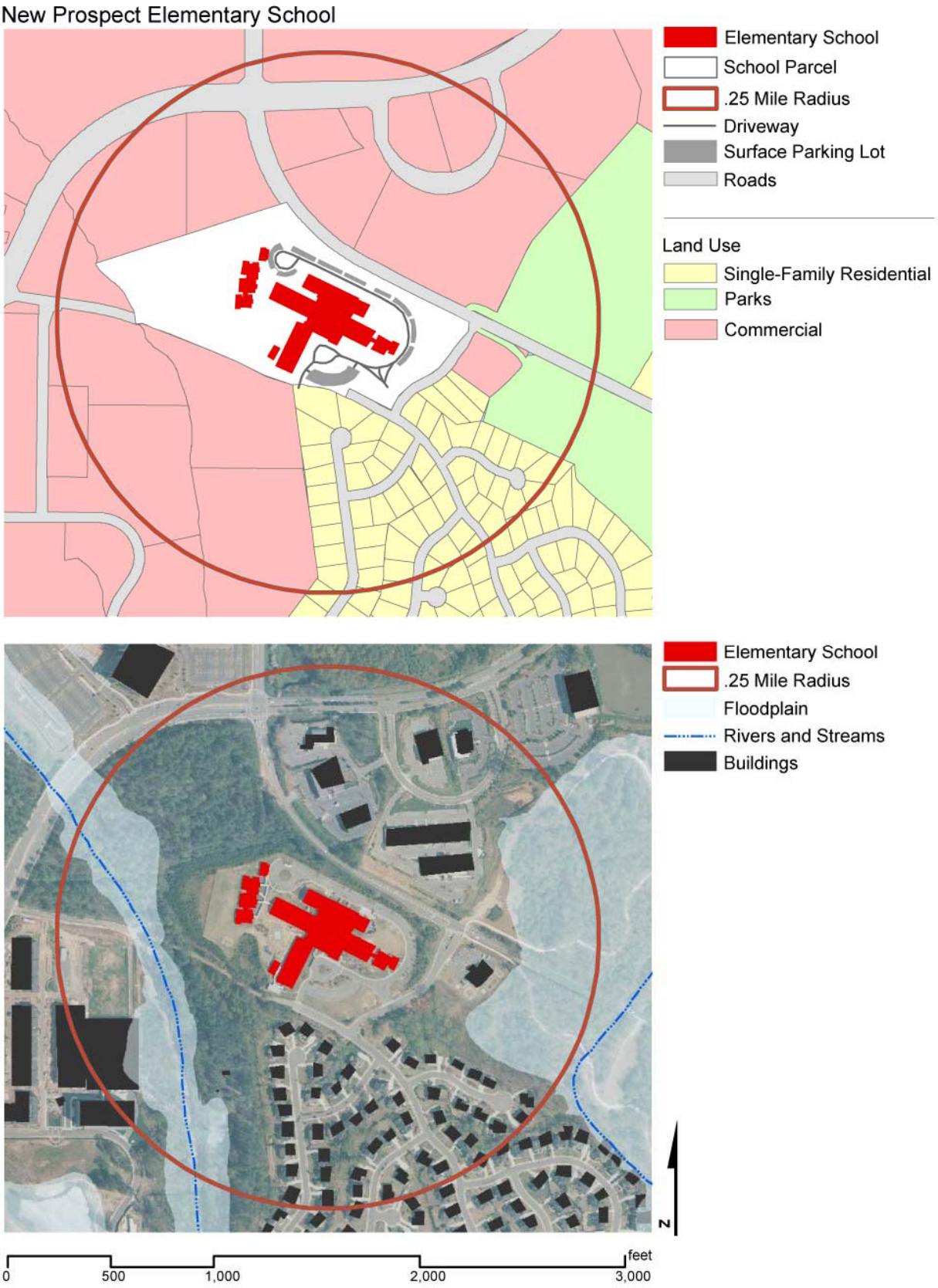

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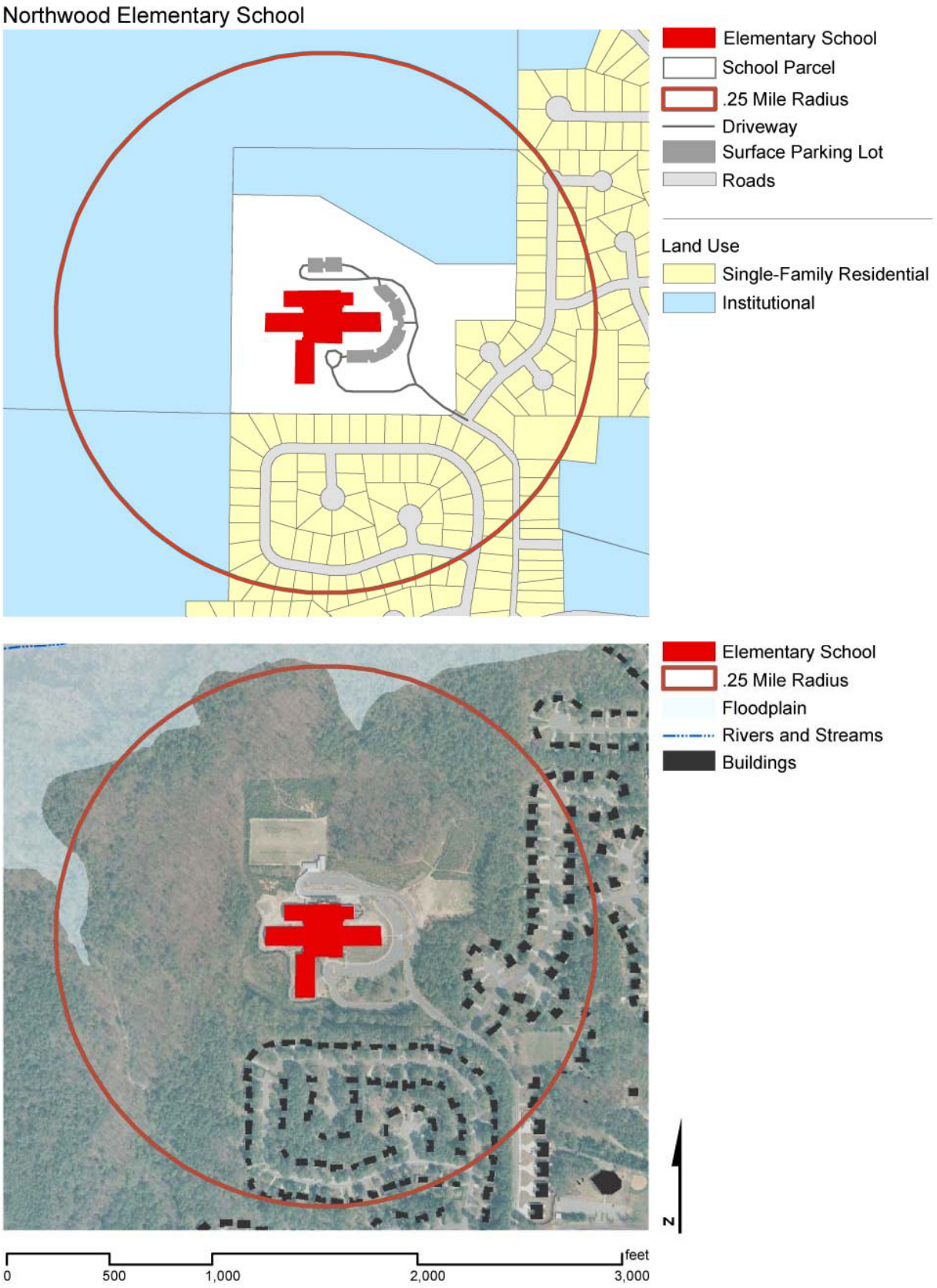

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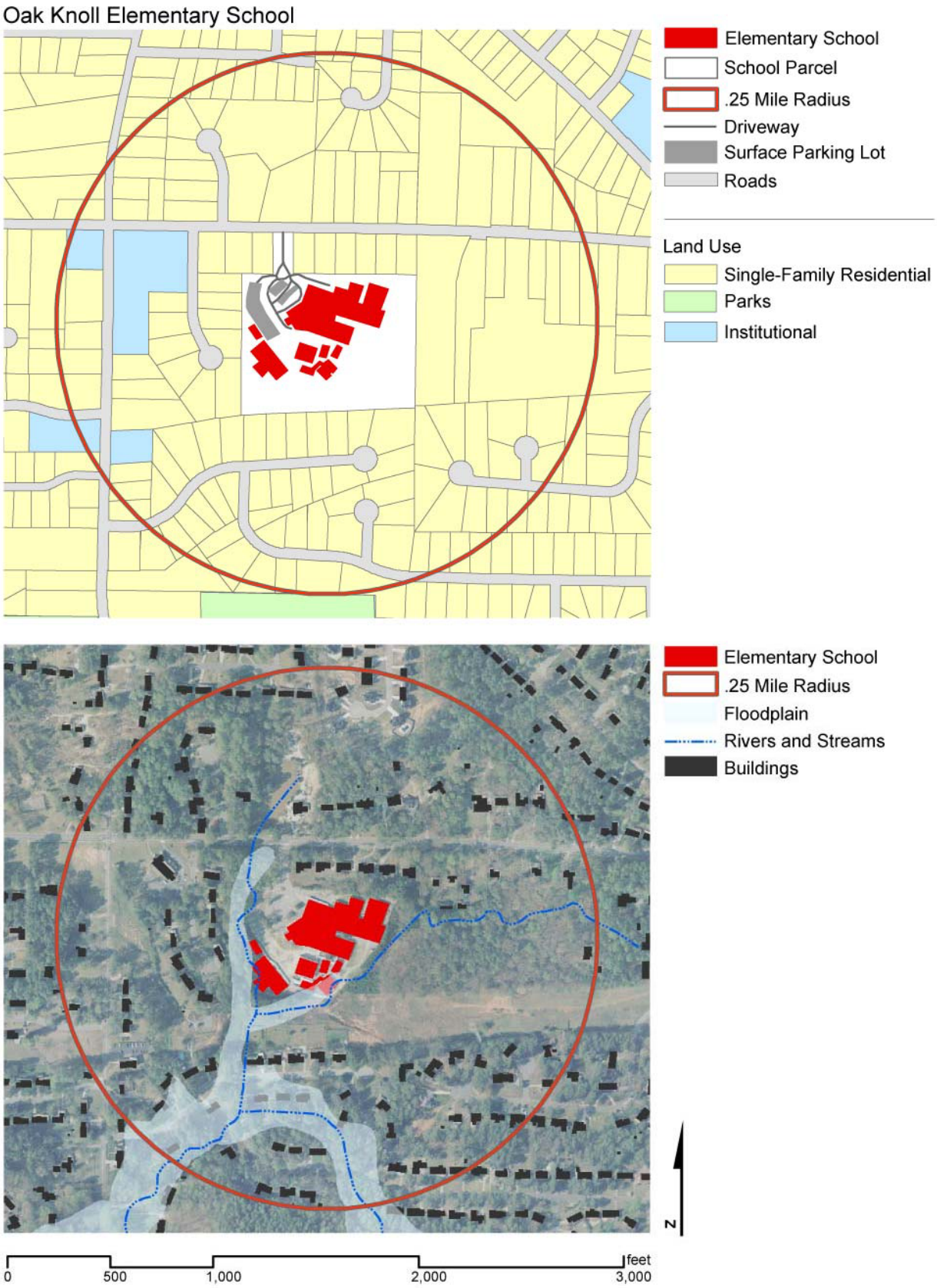

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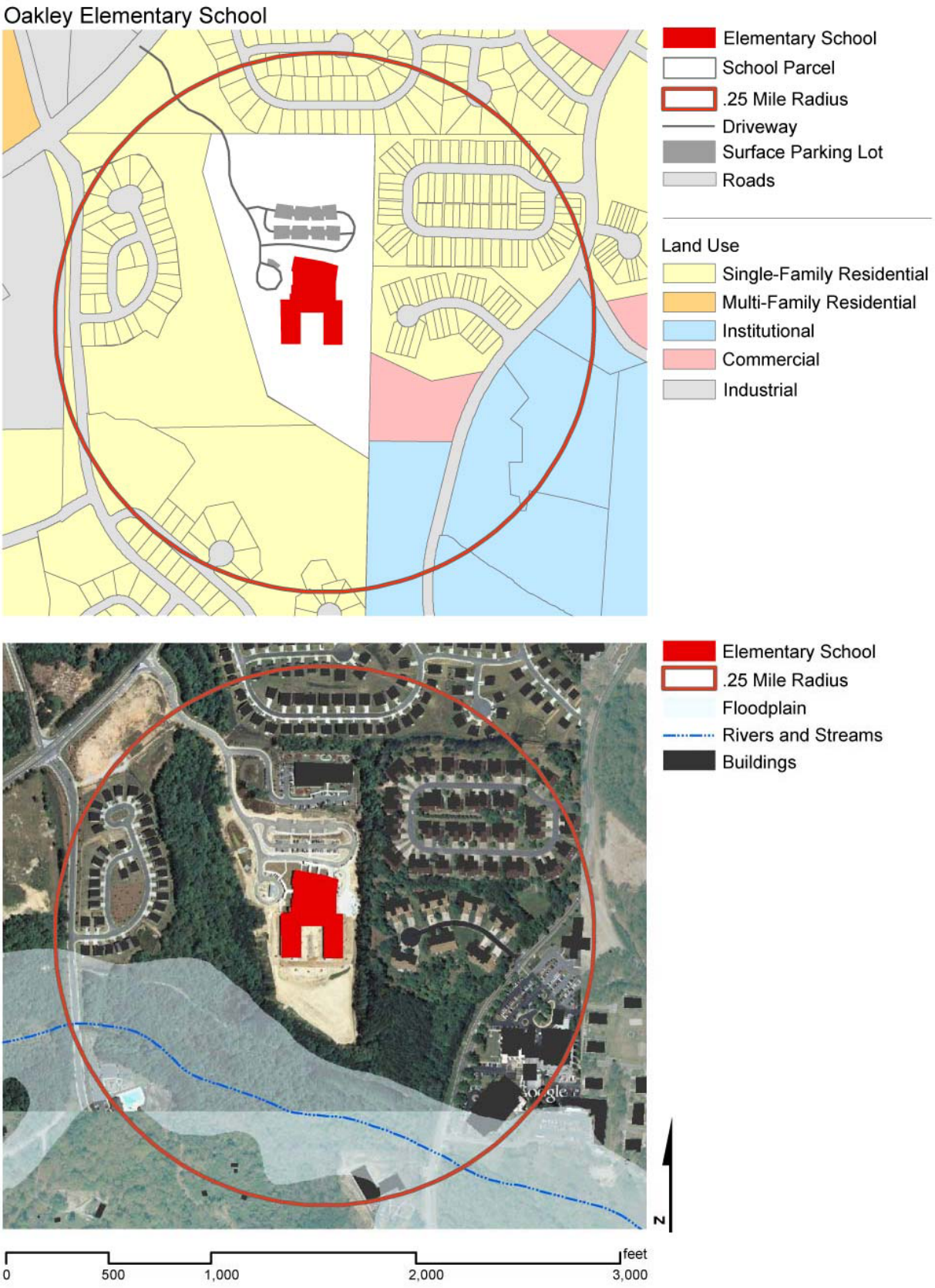

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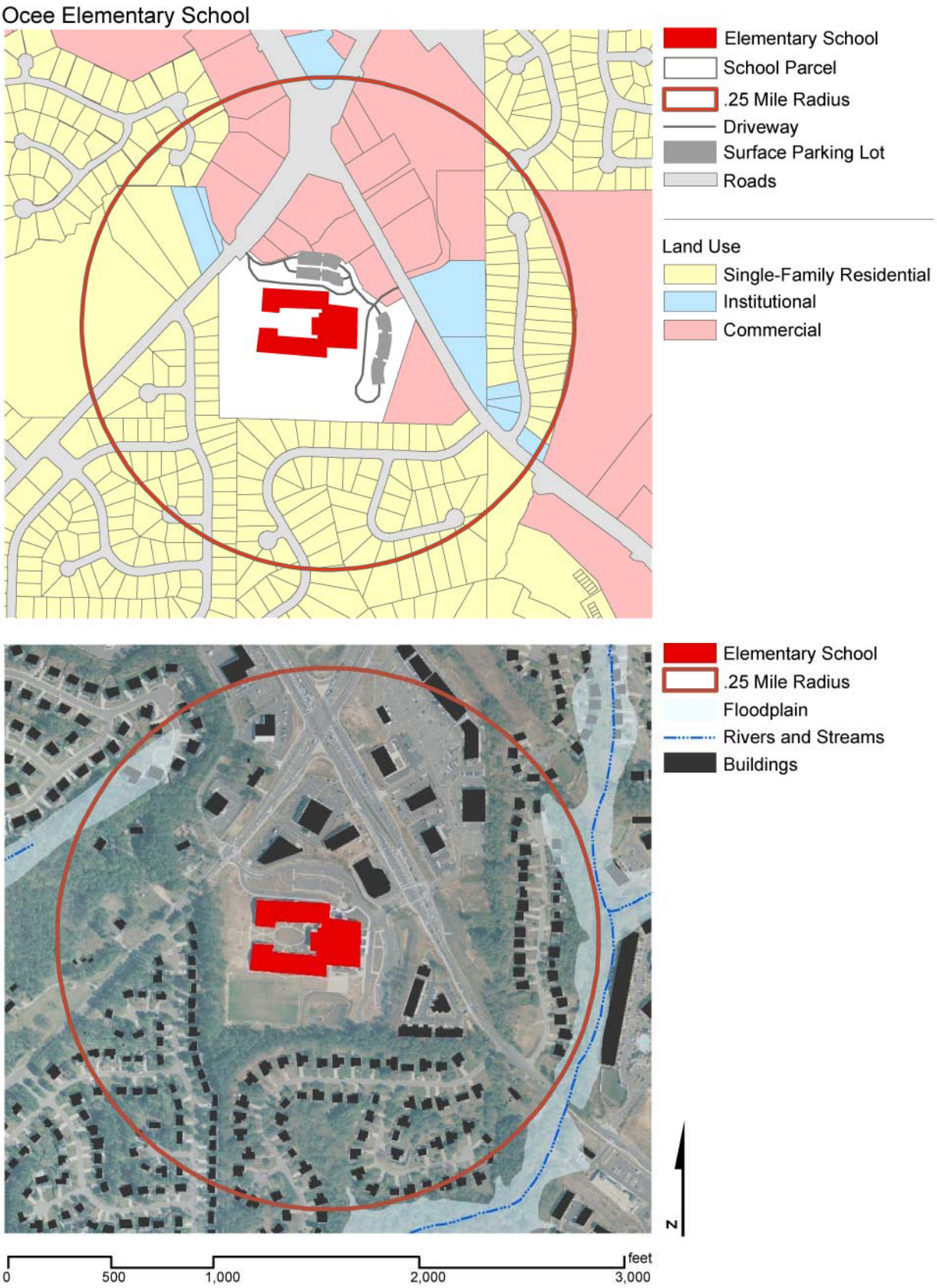

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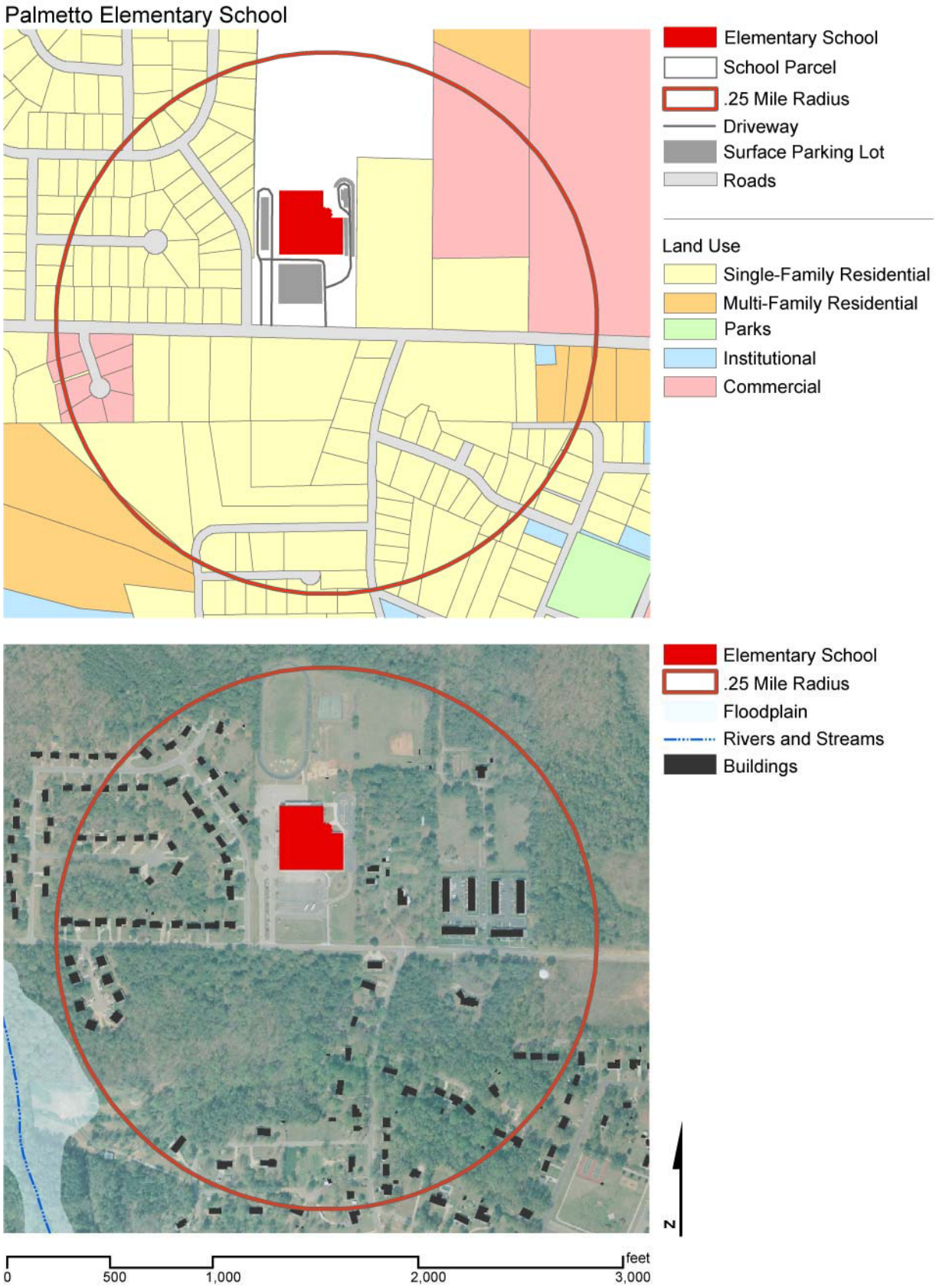

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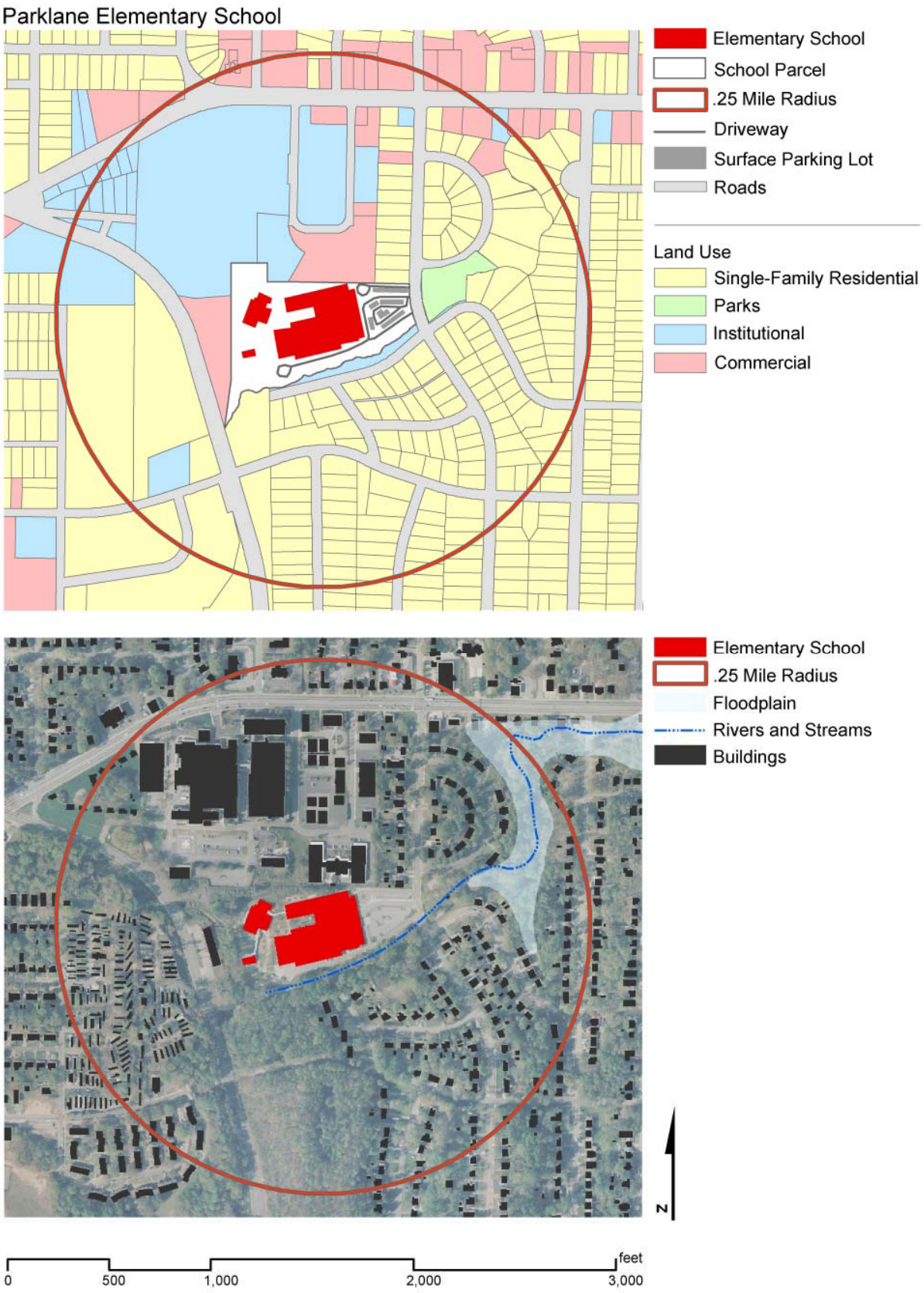

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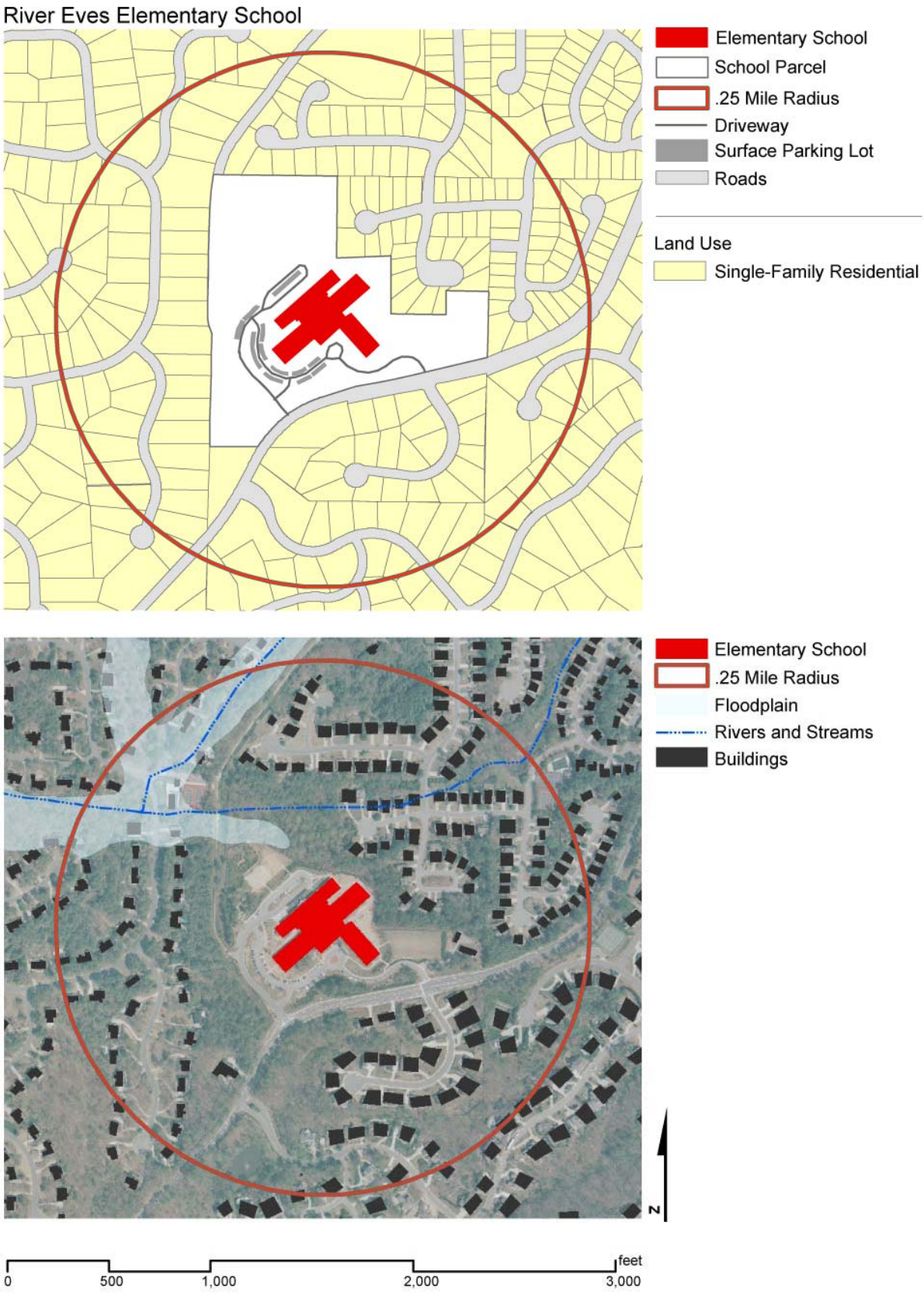

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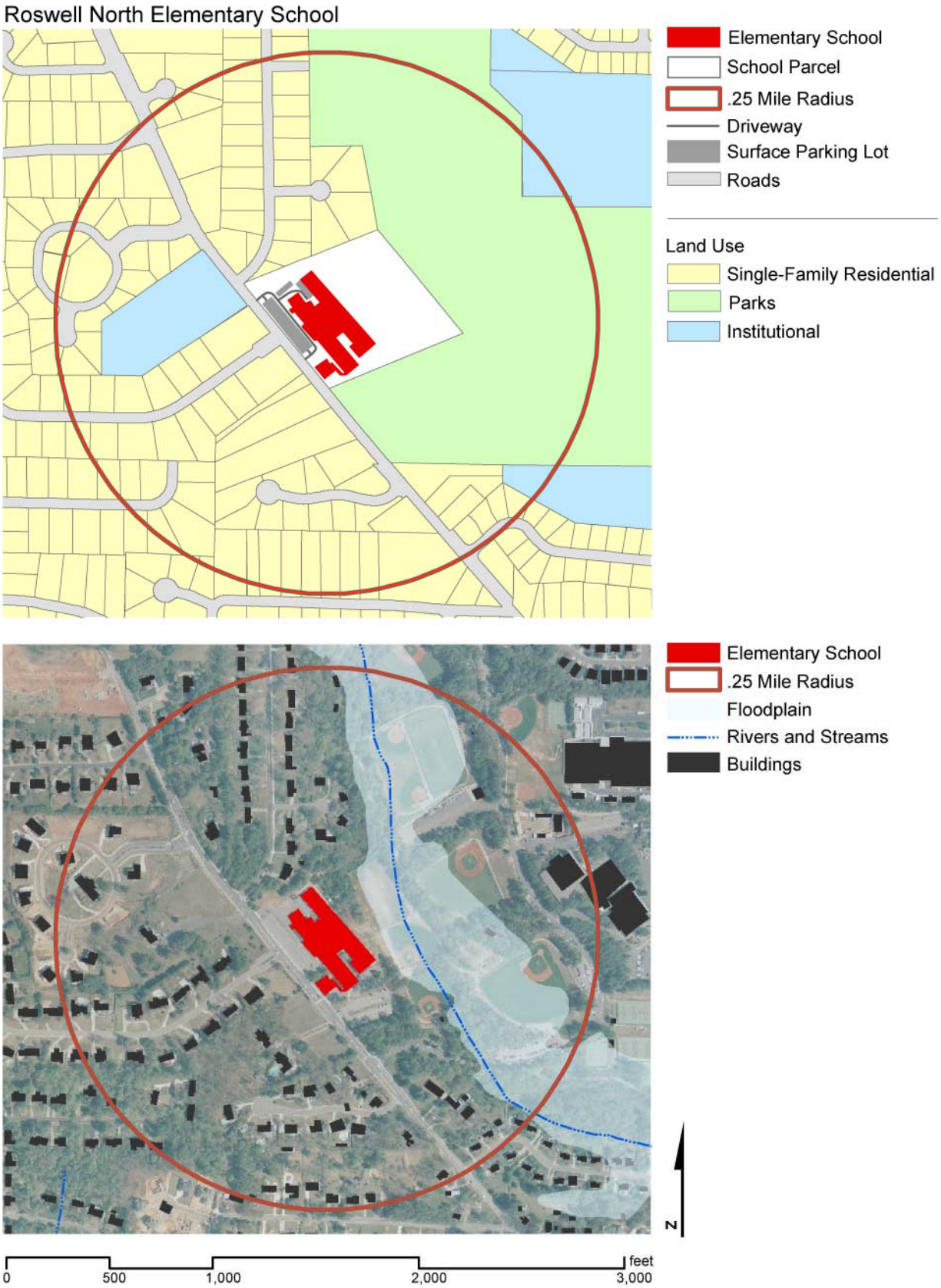

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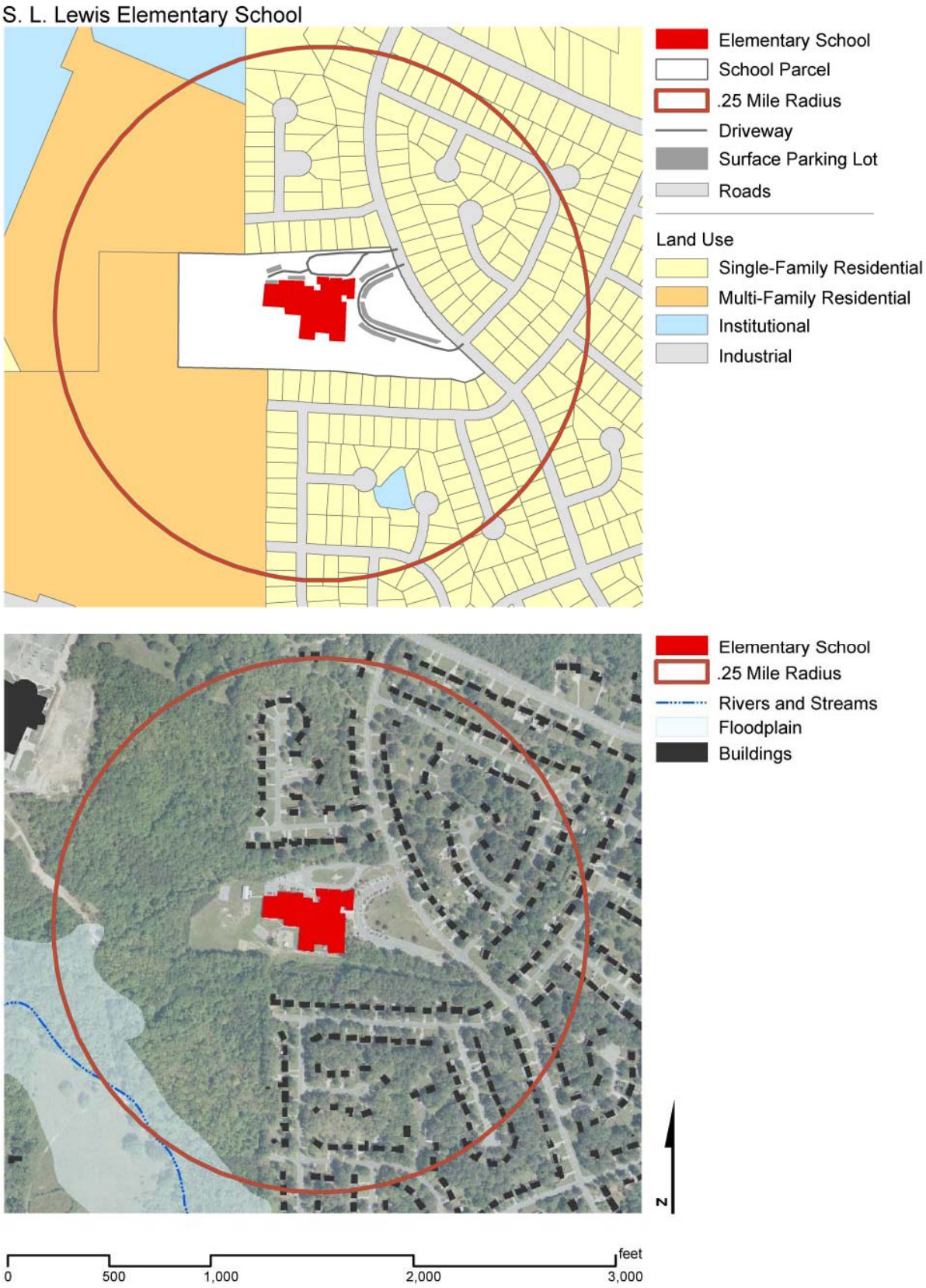

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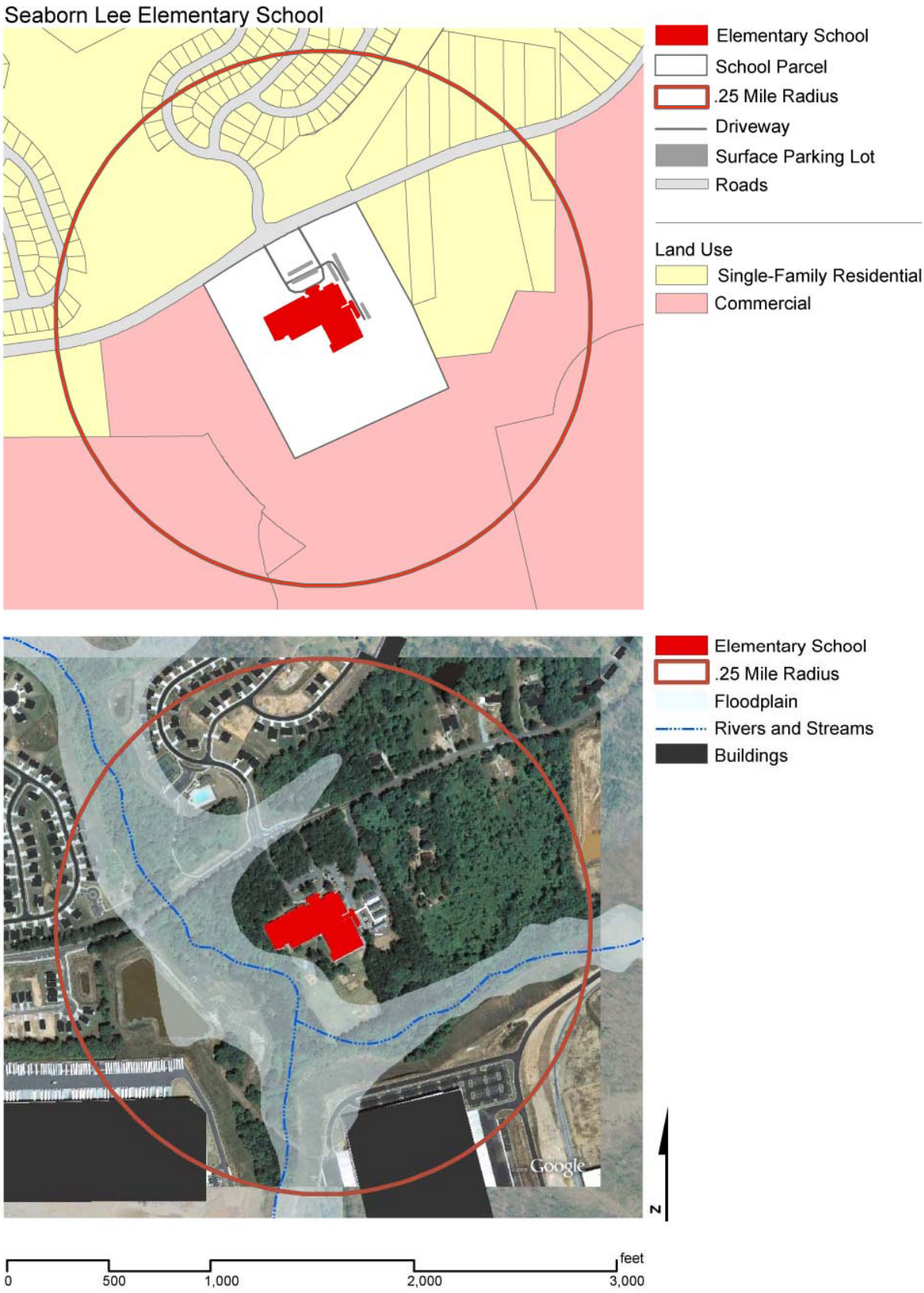

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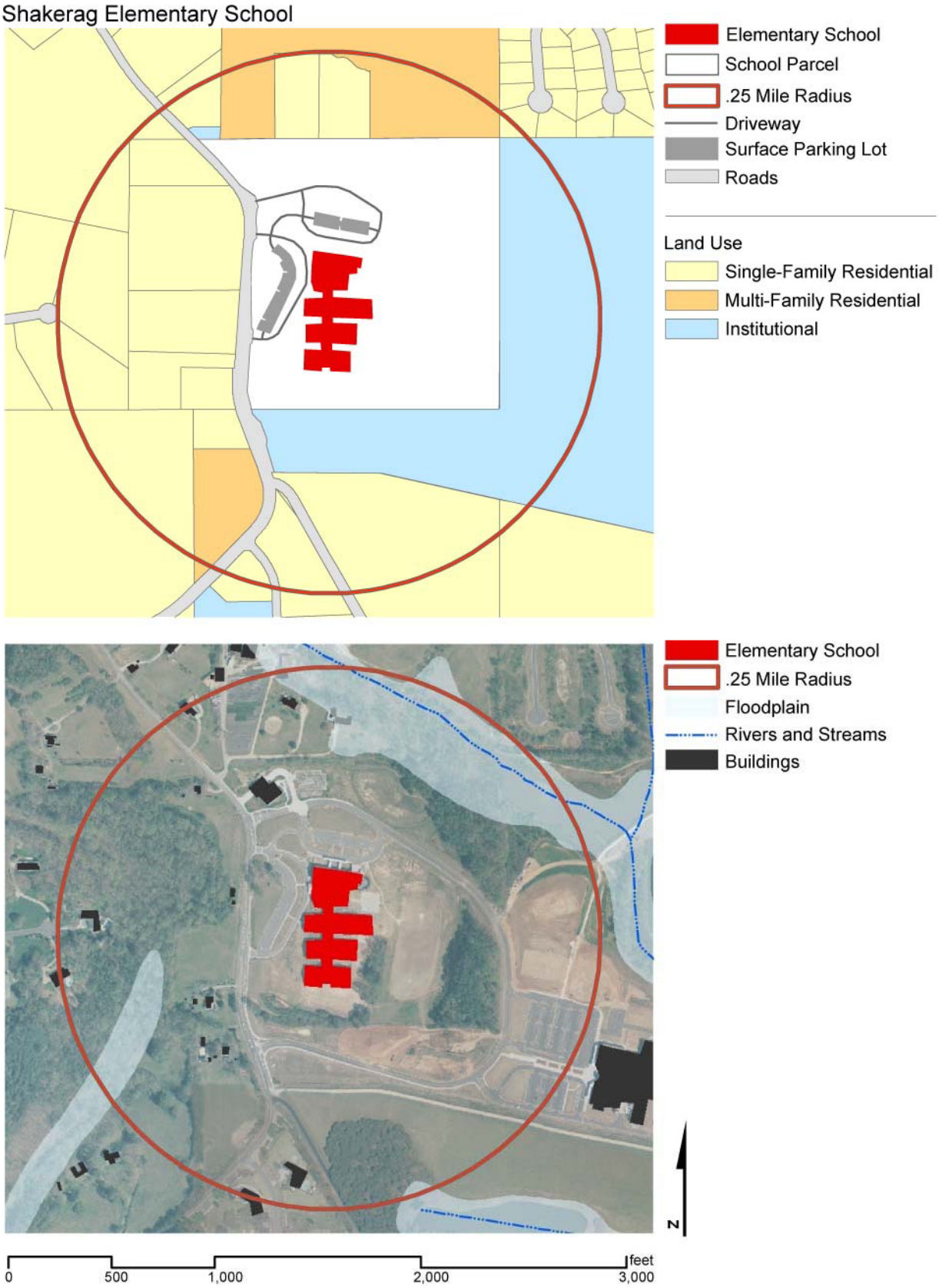

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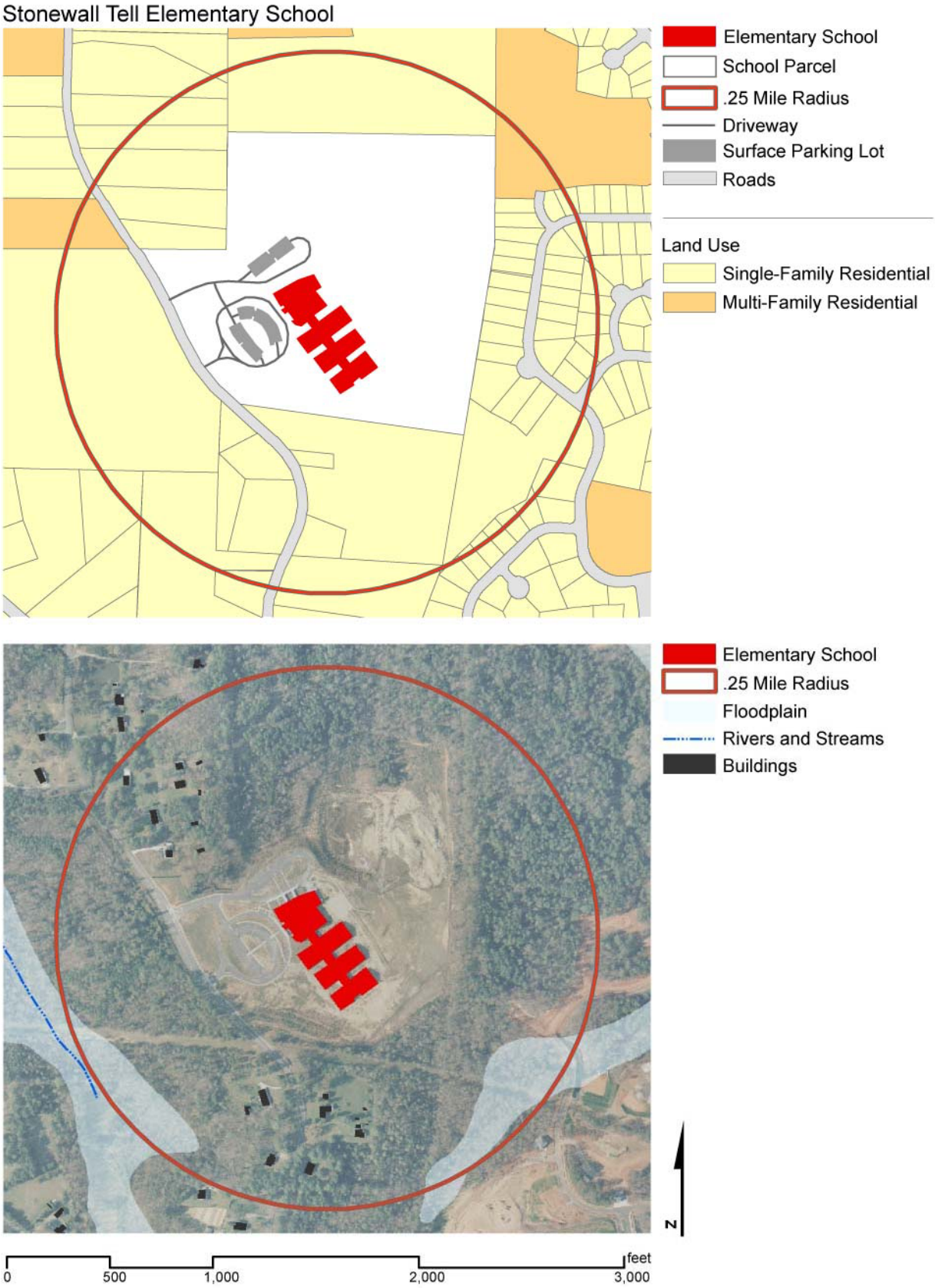

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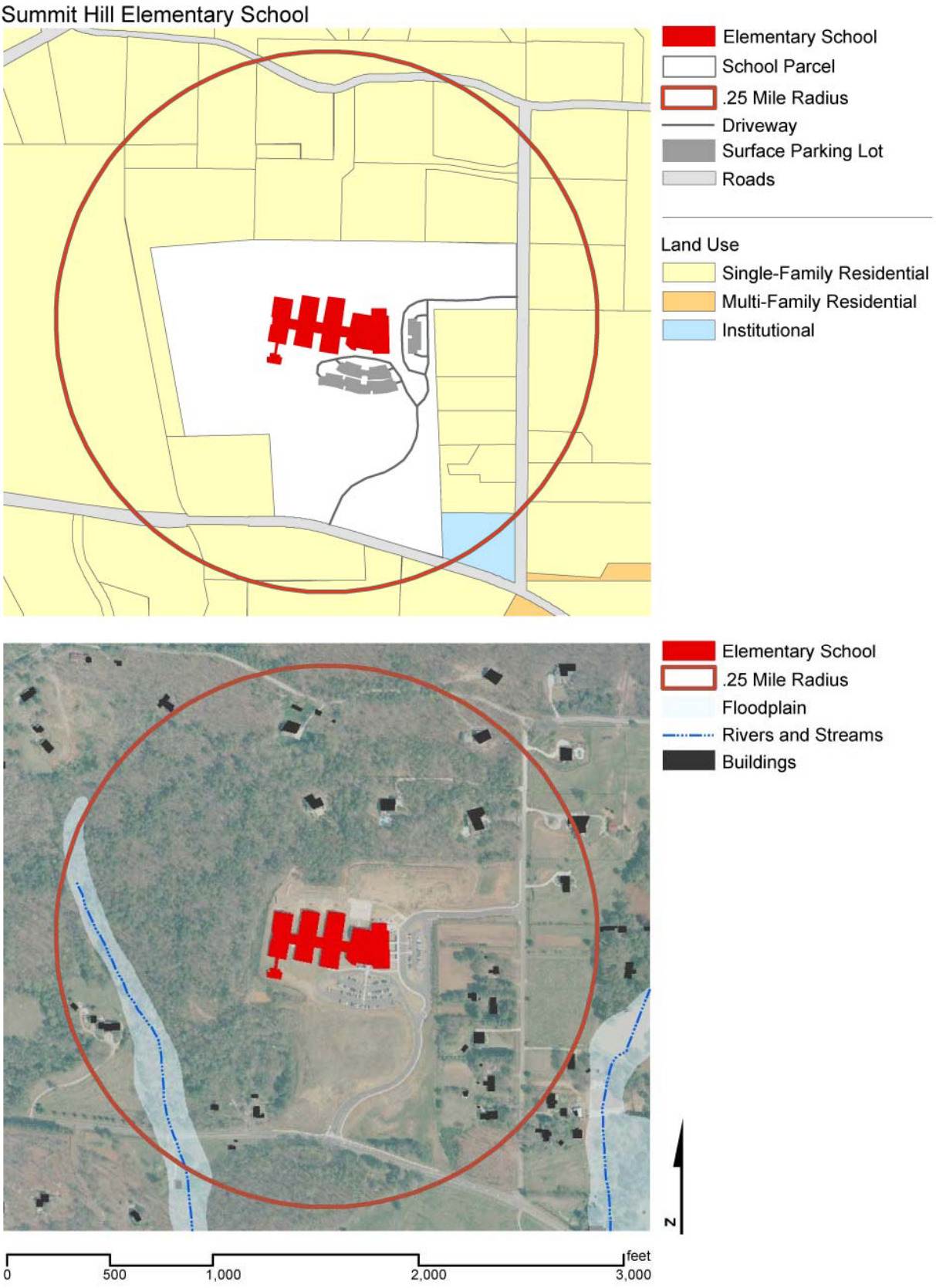

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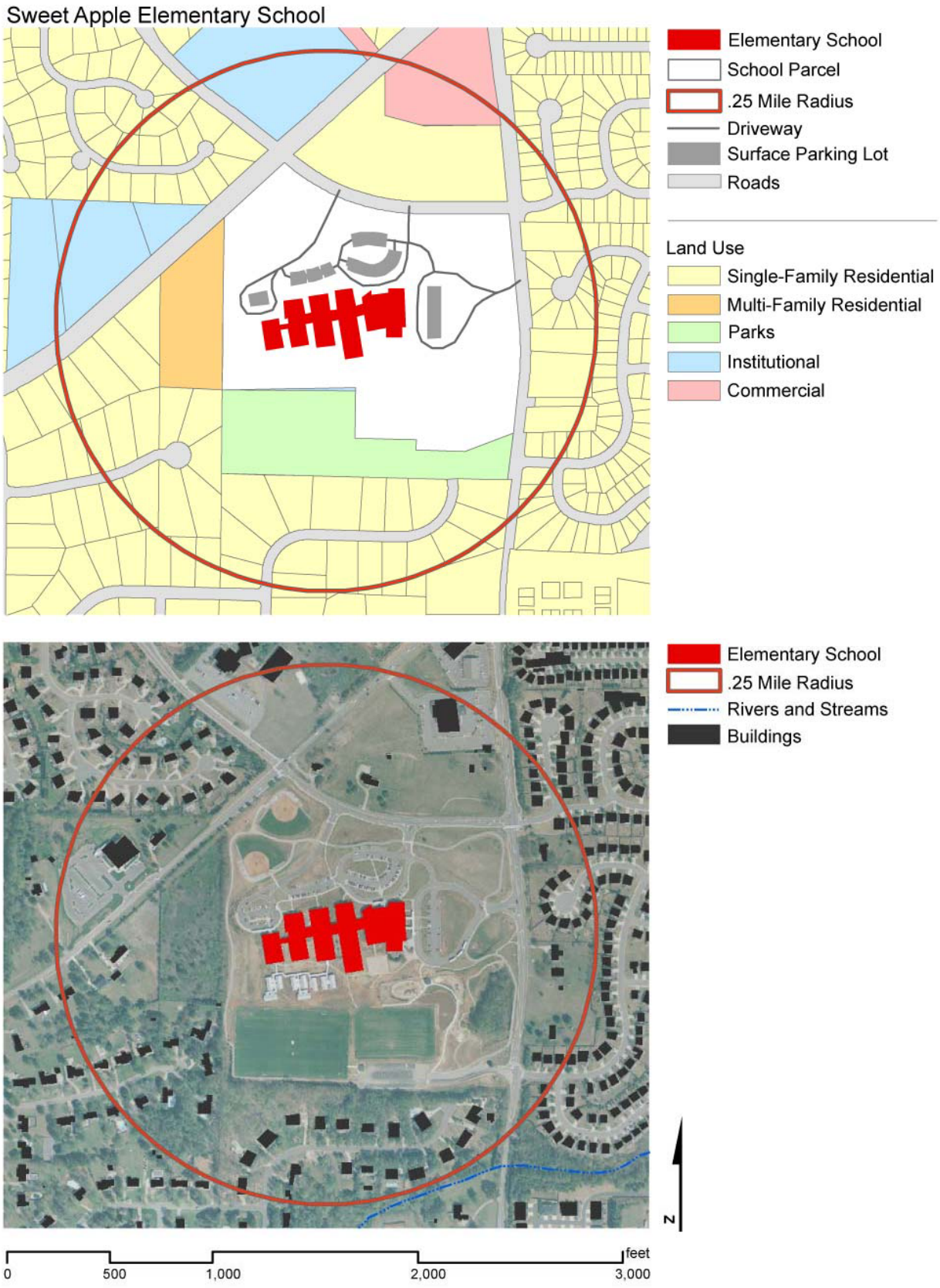

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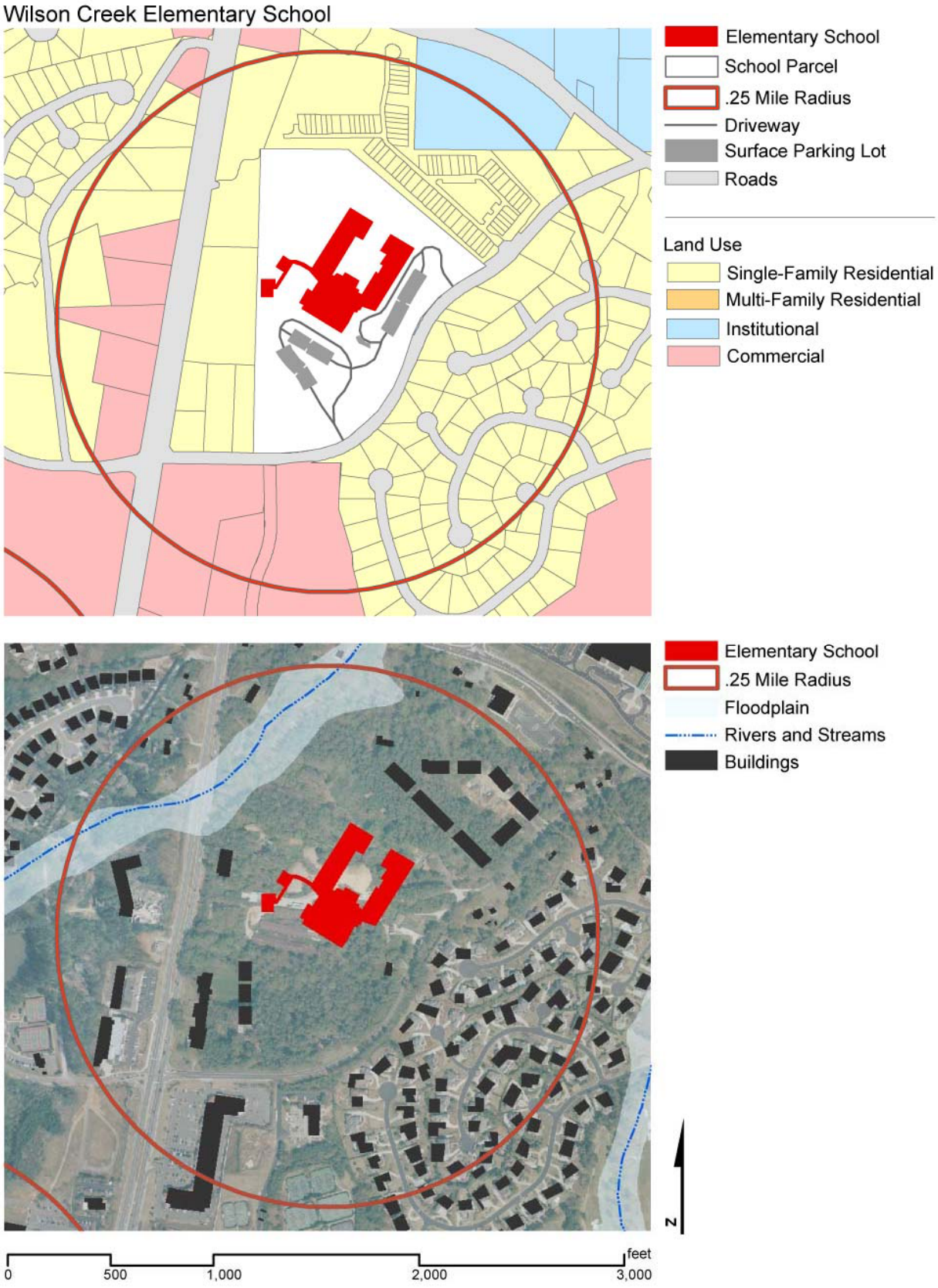

Figure B.1: Continued

Figure B.1: Continued

APPENDIX C:

RAW DATA

Table C.1: Longest Distances Traveled by Students in Each District

Elementary School Name	Location of Elementary School within the District	Longest Distance Traveled to reach the School by Students in the Attendance District
Mount Olive	School not in the center of district, but is in center of residential area.	1.1 miles from the south
Brookview	School is located in northern portion of district.	1.7 miles from south
Hembree Springs	School located in the center of district, but on eastern edge of residential area.	1.7 miles from the north
Ocee	Centrally located, but on southern edge of district.	1.7 miles from the west
Harriet Tubman	Centrally located in the district, on the northern edge of the residential area.	1.9 miles from the south
Love T. Nolan	Centrally located.	2 miles from the east
Wilson Creek	Centrally located.	2.1 miles from the north
Oak Knoll	Centrally located.	2.2 miles from the east
Conley Hills	Located in major residential area, a small residential area is located far to the east.	2.3 miles from the east
Esther Jackson	Centrally located, but separated from western residential area by GA 400.	2.4 miles from the western edge
Liberty Point	Centrally located.	2.4 miles from the east
Spalding Drive	Centrally located.	2.4 miles from southern tip
Mary M. Bethune	Somewhat centrally located, however southern portion of district requires a 2+ mile trip to school.	2.5 miles from the south
Seaborn Lee	Centrally located.	2.5 miles from the east
Mimosa	Centrally located, but separated from major residential area to the south.	2.5 miles from the south
Shakerag	Centrally located in the district, separate from major residential areas.	2.5 miles from the east
Creek View	School located on the western edge of the residential area.	2.6 miles from the north
High Point	Centrally located.	2.6 miles from the north
College Park	Centrally located.	2.7 miles from the west
New Prospect	Located in center of district, but on edge of residential area.	2.7 miles from the east

Table C.1: Continued

Elementary School Name	Location of Elementary School within the District	Longest Distance Traveled to reach the School by Students in the Attendance District
Parklane	Centrally located.	2.7 miles from the northwestern tip
Dolvin	School centrally located, attendance zone boundary is located next to school on north.	2.8 miles from the west
S. L. Lewis	Centrally located.	2.8 miles from the north
Medlock Bridge	Centrally located, but separated from residential areas to the north and south.	2.8 miles from the northern tip
Findley Oaks	School located on the edge of the residential area.	2.9 miles from the north
Alpharetta	School located in more dense, but not most dense area.	2.95 miles from the south
Lake Windward	Centrally located on somewhat of an edge of the major residential area.	3 miles from the northeast
Campbell	Centrally located.	3.1 from the north
Heritage	Located in eastern half of district.	3.1 miles from southwestern corner
State Bridge Crossing	Located in center of district, on the eastern edge.	3.1 miles from the northern tip
Hapeville	School located to the east of I-85.	3.2 miles from the west
Hamilton E. Holmes	Centrally located.	3.2 miles from the east
Abbotts Hill	Centrally located, although school located in least dense area.	3.5 miles from the south
Barnwell	Centrally located.	3.5 miles from the south
C. H. Gullatt	Centrally located.	3.6 miles from the southeastern tip
A. Philip Randolph	Centrally located.	3.8 miles from the north
Heards Ferry	Centrally located.	3.9 from the southeast corner
Hillside	Centrally located in district, western edge of most residential area.	3.9 miles from the east
Northwood	School located on the western side of the district, on western edge of residential area, separated from extreme western residential area by GA 400.	4 miles from the eastern tip
Oakley	Centrally located.	4 miles from the west
River Eves	Located in the western portion of the district.	4 miles from the southeastern tip

Table C.1: Continued

Elementary School Name	Location of Elementary School within the District	Longest Distance Traveled to reach the School by Students in the Attendance District
Evoline C. West	Located in the northern portion of district.	4.2 miles from the south
Manning Oaks	Centrally located, but on edge of southern residential area, and separated from large residential area in the north.	4.3 miles from the north
Mountain Park	Centrally located.	4.3 miles from the south
Crabapple Crossing	Centrally located.	4.5 miles from the northwest
Roswell North	Located in northern portion of district.	4.6 miles from the southern tip
Stonewall Tell	Centrally located in district, district is rural and low density in nature.	4.7 miles from the southeastern edge
Woodland	Centrally located.	5.2 miles from the north
Sweet Apple	School located in the southeastern portion of the district.	5.6 miles from the northwest
Dunwoody Springs	School located on southwestern edge of district.	6.05 miles from the east
Summit Hill	School located near the southern edge of the district, district is low density.	6.2 miles from the north
Cogburn Woods	School is located in southern tip of district.	6.3 miles from the north
Palmetto	Located in the southeastern corner of district, very large low density district.	9 miles from the northern edge

Table C.2: Single-Family Residential Households Located within a .25 Mile Radius and Percentage of Students Able to Walk to School

Elementary School Name	Single-Family Household Buildings within a .25 Mile Radius of the School	School Enrollment	Percentage of Children Living in Single-Family Households that could Potentially Walk to School*
Stonewall Tell	10	1094	0.9%
Crabapple Crossing	8	869	0.9%
Shakerag	10	809	1.2%
Summit Hill	13	1039	1.3%
Brookview	10	642	1.6%
Manning Oaks	23	949	2.4%
Cogburn Woods	28	916	3.1%
Liberty Point	23	722	3.2%
Creek View	34	975	3.5%
Dolvin	40	972	4.1%
A. Philip Randolph	27	572	4.7%
Seaborn Lee	36	614	5.9%
Wilson Creek	51	861	5.9%
Woodland	54	872	6.2%
Heritage	65	1024	6.3%
Campbell	57	892	6.4%
Hillside	46	716	6.4%
Evoline C. West	58	892	6.5%
Dunwoody Springs	62	889	7.0%
Sweet Apple	66	894	7.4%
State Bridge Crossing	56	730	7.7%
New Prospect	49	601	8.2%
Oakley	71	833	8.5%
Roswell North	75	851	8.8%
Hembree Springs	79	823	9.6%
C. H. Gullatt	56	542	10.3%
Mountain Park	91	823	11.1%
Northwood	98	885	11.1%
Heards Ferry	49	398	12.3%
Lake Windward	113	880	12.8%
Hapeville	90	693	13.0%
College Park	52	380	13.7%
Palmetto	75	547	13.7%
Harriet Tubman	74	529	14.0%
Mount Olive	79	532	14.8%
Ocee	135	793	17.0%
Oak Knoll	101	593	17.0%
Abbotts Hill	124	719	17.2%
Barnwell	132	729	18.1%

Table C.2: Continued

Elementary School Name	Single-Family Household Buildings within a .25 Mile Radius of the School	School Enrollment	Percentage of Children Living in Single-Family Households that could Potentially Walk to School*
Alpharetta	131	702	18.7%
Mimosa	160	855	18.7%
High Point	117	617	19.0%
Esther Jackson	132	693	19.0%
River Eves	158	743	21.3%
Medlock Bridge	148	680	21.8%
Conley Hills	120	543	22.1%
Nolan, Love T.	173	782	22.1%
Spalding Drive	168	706	23.8%
S. L. Lewis	184	721	25.5%
Holmes, Hamilton E.	181	649	27.9%
Findley Oaks	257	816	31.5%
Mary M. Bethune	223	695	32.1%
Parklane	244	460	53.0%

*Assuming one child per household structure.

Table C.3: Acreage of All Elementary School Parcels

Name	Enrollment	ES Site Size (Acres)	Minimum Acreage According to DOE Guidelines	Additional Acres Required	Total Minimum Acreage	Amount Acreage Exceeds or is Deficient
Roswell North	851	10.18	5	8	13	(-2.82)
High Point	617	10.01	5	6	11	(-0.99)
Spalding Drive	706	11.15	5	7	12	(-0.85)
Parklane	460	9.37	5	4	9	0.37
Mount Olive	532	10.42	5	5	10	0.42
A. Philip Randolph	572	10.58	5	5	10	0.58
Hapeville	693	12.31	5	6	11	1.31
Conley Hills	543	11.81	5	5	10	1.81
Mimosa	855	14.83	5	8	13	1.83
Alpharetta	702	14.63	5	7	12	2.63
Crabapple Crossing	869	15.76	5	8	13	2.76
Mary M. Bethune	695	13.97	5	6	11	2.97
Brookview	642	14.11	5	6	11	3.11
Oak Knoll	593	13.54	5	5	10	3.54
Heritage	1024	18.77	5	10	15	3.77
Love T. Nolan	782	15.78	5	7	12	3.78
Esther Jackson	693	15.26	5	6	11	4.26
Medlock Bridge	680	15.73	5	6	11	4.73
S. L. Lewis	721	17.13	5	7	12	5.13
Ocee	793	18.43	5	7	12	6.43
Woodland	872	19.78	5	8	13	6.78
Manning Oaks	949	20.87	5	9	14	6.87
Dunwoody Springs	889	21.14	5	8	13	8.14
Mountain Park	823	21.82	5	8	13	8.82
Seaborn Lee	614	19.92	5	6	11	8.92
Heards Ferry	398	17.17	5	3	8	9.17
Oakley	833	22.20	5	8	13	9.20
New Prospect	601	20.85	5	6	11	9.85

Table C.3: Continued

Name	Enrollment	ES Site Size (Acres)	Minimum Acreage According to DOE Guidelines	Additional Acres Required	Total Minimum Acreage	Amount Acreage Exceeds or is Deficient
C. H. Gullatt	542	19.86	5	5	10	9.86
College Park	380	18.18	5	3	8	10.18
Hembree Springs	823	23.33	5	8	13	10.33
Findley Oaks	816	23.67	5	8	13	10.67
Dolvin	972	24.87	5	9	14	10.87
Hillside	716	23.06	5	7	12	11.06
Wilson Creek	861	24.86	5	8	13	11.86
Cogburn Woods	916	26.49	5	9	14	12.49
Barnwell	729	24.70	5	7	12	12.70
Northwood	885	25.79	5	8	13	12.79
River Eves	743	25.22	5	7	12	13.22
Evoline C. West	892	26.47	5	8	13	13.47
State Bridge Crossing	730	26.36	5	7	12	14.36
Lake Windward	880	28.41	5	8	13	15.41
Hamilton E. Holmes	649	27.87	5	6	11	16.87
Harriet Tubman	529	28.64	5	5	10	18.64
Abbotts Hill	719	32.82	5	7	12	20.82
Sweet Apple	894	34.83	5	8	13	21.83
Liberty Point	722	35.58	5	7	12	23.58
Shakerag	809	37.35	5	8	13	24.35
Summit Hill	1039	40.38	5	10	15	25.38
Stonewall Tell	1094	43.82	5	10	15	28.82
Campbell	892	43.14	5	8	13	30.14
Creek View	975	52.13	5	9	14	38.13
Palmetto	547	48.57	5	5	10	38.57

Table C.4: Acreage of All Elementary School Parking Lots

Elementary School Name	Surface Parking Lot Acreage
Seaborn Lee	0.24
Mary M. Bethune	0.26
Parklane	0.28
College Park	0.32
Brookview	0.36
High Point	0.42
S. L. Lewis	0.51
River Eves	0.51
Roswell North	0.51
Spalding Drive	0.51
Hapeville	0.52
Woodland	0.54
Cogburn Woods	0.55
Alpharetta	0.57
Heards Ferry	0.57
Oak Knoll	0.6
Crabapple Crossing	0.61
Love T. Nolan	0.63
C. H. Gullatt	0.66
Philip A. Randolph	0.66
Harriet Tubman	0.66
Mount Olive	0.67
Esther Jackson	0.68
Barnwell	0.74
Campbell	0.74
Findley Oaks	0.75
New Prospect	0.78
Evoline C. West	0.81
Hembree Springs	0.88
Oakley	0.88
Mimosa	0.93
Mountain Park	0.94
Hillside	0.95
Northwood	0.95
Lake Windward	0.97
Manning Oaks	0.98
Shakerag	0.98
Stonewall Tell	0.98
Dunwoody Springs	0.99
Summit Hill	1.02
State Bridge Crossing	1.04
Abbotts Hill	1.06
Hamilton E. Holmes	1.06

Table C.4: Continued

Elementary School Name	Surface Parking Lot Acreage
Medlock Bridge	1.06
Dolvin	1.07
Liberty Point	1.08
Creek View	1.11
Conley Hills	1.19
Ocee	1.23
Wilson Creek	1.24
Palmetto	1.42
Sweet Apple	1.45
Heritage	1.47

Table C.5: All Elementary School Driveway Lengths

Elementary School Name	School Driveway Length
Roswell North	170
Hapeville	180
Heritage	190
Mountain Park	200
Mary M. Bethune	290
S. L. Lewis	300
A. Philip Randolph	330
Parklane	335
Spalding Drive	340
Barnwell	350
Lee, Seaborn	350
Evoline C. West	350
Campbell	360
Medlock Bridge	360
Mimosa	360
Mount Olive	385
Love T. Nolan	390
Oak Knoll	390
College Park	400
New Prospect	415
Jackson, Esther	440
Heards Ferry	465
Palmetto	475
Shakerag	475
State Bridge Crossing	490
Hamilton E. Holmes	514
Hillside	530
Alpharetta	546

Table C.5: Continued

Elementary School Name	School Driveway Length
Conley Hills	560
C. H. Gullatt	595
Dunwoody Springs	620
Stonewall Tell	620
Dolvin	630
River Eves	630
Manning Oaks	635
Harriet Tubman	650
Wilson Creek	650
High Point	655
Summit Hill	660
Hembree Springs	670
Sweet Apple	670
Ocee	680
Crabapple Crossing	750
Abbotts Hill	880
Liberty Point	945
Woodland	1,020
Findley Oaks	1,275
Oakley	1,440
Creek View	1,510
Brookview	1,660
Lake Windward	1,730
Cogburn Woods	2,030
Northwood	2,100

APPENDIX D:

COMPILED GIS DATA

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COMPILED GIS DATA

The compiled GIS layers used in this study came from the Fulton County GIS Department, The Center for Geographic Information Systems (GIS) at The Georgia Institute of Technology, and new data layers generated by the author.

Fulton County GIS Data (2008):
Polygon:
FCSS_ES_0809.shp
Land Use
Parcels
Structures
Parks

The Center for GIS (2008):
Raster:
Fulton.sid (2006)
Google Earth Pro - aerial Photographs rectified by the author

Point:
2000 Census Data

Polyline:
Roads
River and Streams (FEMA)

Polygon:
Floodplain (FEMA)
Cities
Counties

Generated by the author (2008-09):
Projected Coordinate System:
NAD_1983_StatePlane_Georgia_West_FIPS_1002_Feet

Point:
Elementary School Point Locations

Polyline:
Elementary School Driveways

Polygon:
Elementary School Building Footprints
Elementary School Parking Lots
Blocks

Floodplain within BOE Parcels
.25 Mile Buffers around Elementary Schools

Fulton County Data Updated by the author (2008):
Structures
Parcels
Board of Education Parcels

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